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COURSE OF STUDY FOR THE TRAINING DEPARTMENT

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Published by
Northern Illinois State Normal School

The Training Department

F. R. RITZMAN, DIRECTOR.

The Training Department of the Northern Illinois State Normal School is provided for in two houses, one a complete and well-equipped building on the campus and the other the Glidden school, on South First street, in DeKalb. Each of these schools serves as a regular ward school for the city and has the same supervision as the other ward schools of the city. About seven hundred children are provided for in these schools.

As a rule every regular schoolroom is provided with a critic, who closely directs and supervises the work of the student teachers who instruct the children in her room. The principals of buildings, besides the duties of general management, aid in supervision of class instruction. The lessons are so carefully planned and organized beforehand that student teachers are generally able to find their way quickly into effective teaching.

Two terms of teaching, on half-day time, are the regular requirements for student teachers before graduation. Room charge, or the general management of all the classes in a room, is required for one of these terms. Each student in training is required also to attend "critique lessons," that is, illustrative exercises with regular classes given by the room critics or by other experienced teachers. Later these lessons are fully discussed by students and critics.

The heads of departments and other regular teachers in the Normal school participate freely in the Training School work, either by advice or direction of students in special departments such as music, drawing, manual arts, literature, history, nature study, arithmetic, etc., and also by presenting and discussing critique lessons.

The following course of study has been carefully worked out by the Director and teachers, aided by the Normal School instructors in their special departments. Many of the more important topics have been elaborately worked out and the material thus brought into shape has been reduced to printed or typewritten form for the ready use of teachers in all the schools of the city. The same course of study is followed in all the schools of DeKalb, and the Training Schools thus approximate closely, in material and methods, the usual work of city schools.

It is expected that the student teacher shall do much of the actual organization of the subject matter constituting a given topic or type. Emphasis is placed upon the intelligent handling of books, not only text books, which are in the hands of the pupils, but supplementary and reference material as well. This organization of the subject matter, on the part of the student, is held second only in importance to the technique of conducting the recitation.

COURSE OF STUDY.

THE LANGUAGE GROUP.

The studies of this group—Literature, Reading, Language, Spelling and Writing—hold at once the widest relations with the Course of Study as a whole and the closest among themselves. The aim throughout the course is to recognize this fact and keep the members of the group in immediate association each with the other and in intimate correlation with other studies.

LITERATURE.

In the first three grades children are introduced to literature by oral story-telling. The exercises in learning to read run parallel to the story-telling.

All primary teachers should be skillful story-tellers and equally skillful in getting good oral reproduction from the children. The power over language and the enrichment of thought obtained from stories are of great value. The oral treatment of stories is also the best preparation for thought work in reading proper.

References for Teachers' use:
Special Method in Reading.
Scudder's Literature in Schools.
Songs of Treetop and Meadow.
Land of Song (3 volumes).

FIRST GRADE.

Suggested list for story-telling and oral reproduction:
Fairy and Folk Stories.
The Old Woman and Her Pig.
The Three Billy Goats Gruff.
The Three Bears.
Three Little Pigs.
Chicken Little.
Grimm's Briar Rose (Sleeping Beauty).
Grimm's Rose-Red and Snow-White.
Grimm's The Elves and the Shoemaker.
Grimm's The Musicians of Bremen.
Grimm's The Wolf and Seven Little Kids.
Andersen's The Pea Blossom.
Andersen's The Ugly Duckling.
Cinderella.
The Wonderful Pot.

ANIMAL STORIES.

Andersen's What the Moon Saw.
Ouida's Moufflou.
Androclus and the Lion.

BIBLE STORIES.

Moses in the Bulrushes.
The Christ Child.
David and Goliath.
The Child Samuel.

FABLES.

The Crow and the Pitcher.
The Hare and the Tortoise.
The Fox and the Crow.
The Goat, the Kid, and the Wolf.
The Two Goats.
The Town Mouse and the Country Mouse.

SECOND GRADE.

Beauty and the Beast.
Hiawatha.
Robinson Crusoe.
Arabian Nights, Aladdin and His Wonderful Lamp.
Arabian Nights, The Fisherman and the Genie.
The Pied Piper of Hamelin.
More English Fairy Tales.
The Lost Princess, Eva March Tappan.

THIRD GRADE.

Greek Myths: Tanglewood Tales, The Wonder Book, The King of the Golden River.
Robin Hood (school edition), Howard Pyle.
The Story of Siegfried, Baldwin; Chs. I-VI.
Jungle Book, Rikki-Tikki-Tavi.
Mowgli and Toomai of the Elephants.
Arabian Nights, Sinbad the Sailor.
The Story of King Arthur, Sidney Lanier; Book I.

READING.

BASAL TEXT—ELSON SERIES.

In primary grades reading exercises involve, first, rich and interesting thought exercises, and second, the mastery of a formal art.

A definite phonetic plan is needed which will reduce the difficulties of mastering forms to their lowest terms. Equal emphasis is placed on the thought and form difficulties in primary reading. The difficult problem for solution is the proper mingling of thought and form in expressive reading.

The following list of books is selected for use in the different grades.

Each poem or story, so far as possible, should be treated as a complete unit of thought.

The reading of complete stories, longer and shorter, is of great importance in developing the power of children to interpret and appreciate thought values. The course in Literature and Reading should be a complete introduction of children to American, English, and World Literature.

To get children interested in such readings and to form the habit of using and enjoying such books is a very important part of the best education.

FIRST GRADE.

Summers' Primer, Brooks' Primer, Riverside Primer, Outdoor Primer, Sunbonnet Babies, Free and Treadwell Primer, Horace Mann Primer Circus Reader, Elson First Reader.

SECOND GRADE.

Overall Boys, Free and Treadwell First Reader, Around the World, I; In Mythland, I; Old Time Stories Retold, Reynard the Fox, Progressive Road to Reading, II; Elson Second Reader, Tell Me a Story, Bow-Wow and Mew-Mew.

THIRD GRADE.

The Tree Dwellers, The Early Cave Men, Free and Treadwell Second Reader, Fairy Stories and Fables, Lansing's Rhymes and Stories, Robinson Crusoe, Fifty Famous Stories, Classic Stories, More Classic Stories, Robert Louis Stevenson's A Child's Garden of Verses, East o' the Sun and West o' the Moon.

FOURTH GRADE.

Old Stories of the East, Story of Ulysses, Andersen's Fairy Tales, Judd's Classic Myths, Stories of Old England, Four Old Greeks, Great Americans for Little Americans, Pinocchio.

FIFTH GRADE.

Hiawatha, Arabian Nights, Achilles and Hector, Short American History Series, Rip Van Winkle, Kingsley's Greek Heroes, Robin Hood Stories, Pied Piper of Hamelin.

SIXTH GRADE.

King of the Golden River, Robin Hood, The Flag-Raising, The Wonder Book, Tanglewood Tales, Scotch Stories and Ballads, Horatius at the Bridge, Ulysses Among the Phaeacians.

SEVENTH GRADE.

Miles Standish, King Arthur and His Court, Birds and Bees, Lobo, Rag and Vixen, Christmas Carol, Grandmother's Story of Bunker Hill, William Tell, Haidu (Spyri), King Arthur (Mallory), Stories from British History.

EIGHTH GRADE.

Snow Bound, Treasure Island, Cricket on the Hearth, Afoot and Afloat, Evangeline, Tom Brown's School Days, Ichabod Crane, The Great Stone Face, Katahdin and Chesuncook, Man Without a Country, Little Women.

LANGUAGE

The mastery of language forms for oral and written use is the main purpose of language exercises.

Much stress should be laid upon the mastery of the simple elements; the common, daily correct usages, both in speech and in writing and composing.

In the first six grades emphasis is placed upon correct usage and the formation of correct habits of writing and speaking.

Technical grammar in a very simple form, embracing the few essentials, is reserved for the seventh and eighth grades. In these grades grammar should throw much light upon correct usage, and there should be a constant review and application of previous studies in connection with grammar in seventh and eighth grades.

FIRST GRADE.

Sources of materials for written work:

1. The naming of objects the pictures of which the pupils have drawn upon the board.
2. Names of their pets, e. g., dog, cat, bird.
3. Names of colors—of grass, of flowers, of leaves, of the sky, etc.
4. One-word requests or commands, e. g., fly, run, hop.
5. Short, interesting sentences in which there is much repetition, e. g., a. What can I do with my feet? (I can run. I can hop. Etc.)
    - b. What a dog can do.
    - c. What a cat can do.
    - d. What is in the sky.
    - e. What I can do with my ball.
    - f. Things I like to do in winter; in spring; in autumn.
    - g. What the rain falls on.
    - h. What the sun shines on.
6. Description of simple objects of interest to pupils.
7. Sentences suitable for special days.
8. Simple invitations to school functions.
9. Riddles about common things.

In writing the pupils learn, on the form side:

1. The use of capital letters in writing the first word of every sentence and in writing the names of people and of places.
2. They also learn to close every sentence with a period or a question mark as needed.

Most of the written work is upon the board, where large, free, light lines are insisted upon.

In speaking they learn when to use *a* and when *an*, the correct use of *is* and *are*, *was* and *were*. They learn to avoid the use of *aint* and *have got*.

SECOND GRADE.

Sources of material for written work:

1. Questions about a plant or animal studied. Leave room for the answers after the pupils have observed more closely.
2. Reproduction of short, simple stories.
3. Copy poems which the pupils have memorized into Poem Books which they have made.
4. A single stanza of poetry written from memory.
5. Description of a person. The other pupils guess what person is described.
6. Description of an interesting event or incident.
7. Description of simple games or plays.
8. Description of pictures in the room; answers to questions about them.
9. Description of pictures which the pupils have drawn to illustrate their Literature.
10. Description of small pictures which each has pasted at the top of his sheet of writing paper, or a story which the picture suggests to him.
11. Description of the interesting tricks which their pets perform.
12. Description of home occupations or plays.

In writing the pupils learn, on the form side:

1. How to use capital letters in writing the subject of a composition.
2. The abbreviations for Mr. and Mrs.
3. The use of the comma in separating terms of a series.
4. How to use correctly quotation marks and the comma to separate the quotation from the rest of the sentence.
5. Indentation of the first line of a composition.
6. Leaving of a margin at the left side of the paper in writing.
7. Correct use of the homonyms I, eye; to, two; know, no; their, there; hour, our; son, sun; meat, meet; buy, by; knew, new; aunt, ant; tail, tale; ate, eight; cent, sent; and of *of* and *off*.

In speaking, the pupils learn to use correctly *there is* and *there are; I* and *me; this* and *that; these* and *those;* the correct pronoun needed after *is* and *was*.

Pupils learn the correct use of the irregular verbs:

break	broke	broken
begin	began	begun
come	came	come
do	did	done
go	went	gone
eat	ate	eaten
lie	lay	lain
see	saw	seen
sit	sat	sat
write	wrote	written

THIRD GRADE.

Sources of material for written work:

1. The same as in second grade.
2. Letter writing.
3. Simple dramatization of stories.
4. Original stories.
5. Stories about noted men and women in whom the pupils are interested.
6. Nature Note Books in which pupils record interesting observations.
7. Recipes for making candy and other things which children can make.
8. Interesting problems in Arithmetic for other members of the class to solve, but no pupil must write a problem which he cannot himself solve.
9. Notes on a Home Geography Excursion.

In writing, the pupils learn on the form side:

1. How to use the apostrophe to denote possession.
2. How to use the apostrophe in the contractions, *isn't, hasn't, haven't, hadn't, don't, doesn't.*
3. How to use the period in the abbreviations, Dr., St. (Street), *doz.*, for the names of the months and for the name of their state.
4. How to paragraph.
5. A good form for letter writing.
6. How to address an envelope.
7. How to divide words into syllables for the purpose of making a proper division at the end of a line.

The pupils learn to write correctly the homonyms:

rode	rowed	road
berry	bury	
week	weak	
sail	sale	
whole	hole	
pear	pair	pare
one	won	
forth	fourth	

In speaking, the pupils are taught how to use properly the following irregular verbs:

choose	chose	chosen
drink	drank	drunk
fly	flew	flown
give	gave	given
ring	rang	rung
sing	sang	sung
take	took	taken
teach	taught	taught
break	broke	broken
tear	tore	torn
speak	spoke	spoken
rise	rose	risen
wear	wore	worn

The correct use of *who* and *whom* *may* and *can*, *each* and *every*, *either* and *neither*, is insisted upon.

FOURTH GRADE.

I. The sources of material are the same as in third grade, but better and more work is required.

In writing, the pupils learn on the form side:

a. The use of capital letters in writing poetry.
b. The use of the period in writing one's initianls.
c. The use of the comma in separating the name of the person addressed from the rest of the sentence.
d. The use of the exclamation point.
e. How to write the contractions, *I'll*. *I'm*, *I've*, *o'clock*, *'tis*, *it's*, *ne'er*. *he's*, *she's*, *shouldn't*, *couldn't*, *shan't* *isn't*, *aren't*. *hasn't*. *can't*. *you'll* and *there's*.

f. How to write the following homonyms:

hall	haul	
false	faults	
heard	herd	
gait	gate	
waist	waste	
Francis	Frances	
peace	piece	
flea	flee	
seen	scene	
oar	ore	o'er
hart	heart	
Jesse	Jessie	

g. How to write the abbreviations, *etc.*, *sec.*, *min.*, *hr.*, *in.*, *ft.*, *yd.*, *pt.*, *qt.*, *gal.*, *bbl.*, *U. S.*, *D. C.*, *R. R.*, *amt.*

In speaking, the pupils learn to use correctly the relative pronouns, *who*, *which* and *that; like* and *as*, and the following irregular verbs: set, set, set; lay, laid, laid; stay, stay, stayed; win, won, won; thrown, threw, thrown; ride, rode, ridden; dig, dug, dug; freeze, froze, frozen.

The pupils develop rules for forming the plurals of nouns, by adding *s*, by adding *es*, by changing *f* to *v* and adding *es*.

The teacher works to overcome the use of *ain't*, of *seen*, for *saw*, of *done* for *did* of *you was* for *you were*.

FIFTH GRADE.

1. Review of language exercises of the four preceding grades.
2. Business letters, business social forms, bills and receipts.
3. Homonyms.

cellar	seller	plain	plane
creak	creek	aloud	allowed
lesson	lessen	soul	sole
pedal	peddle	colonel	kernel
all	awl	in	inn
chews	choose	night	knight
hose	hoes	alter	altar
mail	male	been	bin
fir	fur	tacks	tax

4. Abbreviations: acct., Hon., Gov., Pres. Co., Jr., Sr., M. D., Prof., Supt., Maj., Sen., Rep., Messrs.

5. Review the harder irregular verbs as lie and lay, sit and set, to be, do, fly, get, shall and will, may and can.

6. Prefixes and suffixes and their meaning: a, non, in, ex, ab, pre, sub, inter, ad, ante, anti, contra, post, re, con, de, fore, un, per, ness, ling, kin, ly, est, ness.

7. Practice in using the dictionary. Use of dictionary markings.
8. Vowel and consonant drills. Phonetic accuracy.

COMPOSITION.

A variety of written exercises involving points studied in previous grades.

Topics for composition may be taken from biography, travel, natural scenery, machines and inventions, personal experiences, science, agriculture.

The paraphrasing of poems and stories from memory furnishes training in composition. Standard forms of letter writing.

SIXTH GRADE.

1. Correction of common errors in speech. Use of adjectives and adverbs in comparisons. Avoid extravagance in speech, as awful, dreadful, etc. Discuss the common use of slang. Review the use of pronouns and irregular verbs.

2. Abbreviations: C. O. D., D. D., Atty., N. B., via., vol., mss., Cr., viz. Review other abbreviations and contractions.

3. Make a list of homonyms. Group synonyms and antonyms.

4. Free use of the dictionary, cyclopedias and other reference books. Show how to select materials from reference books.

COMPOSITION.

Outlining points for composition. Paragraphing as based on outlines.

Select for composition reference topics in history, geography, science and literature, lives of authors, topics for debate.

CORRESPONDENCE.

Business letters and social forms.

Written exercises on current events, newspaper topics and large topics of general public interest.

Informal introduction of grammatical terms, subject, predicate, modifiers, noun, verb, clause, object.

Review and apply the simple marks of punctuation—period, comma, quotation marks, capitals, apostrophe.

GRAMMAR.

BASAL TEXT—WEBSTER AND COOLEY.

SEVENTH GRADE.

The study of the sentence as a unit.

I. The sentence as the expression of a thought.

II. The different kinds of sentences:
  1. declarative.
  2. interrogative.

3. imperative.
4. exclamatory.

III. The main parts of a sentence:
   1. Subject.
   2. Predicate.

IV. The base of the sentence, recognized as the essential frame work.
   1. Base of subject (noun, pronoun).
   2. Base of predicate:
      a. main part (verb, verb phrase).
      b. main part plus complements.

V. The modifiers of the base of the subject:
   1. The word modifier:
      a. the adjective.
      b. the participle.
      c. the noun.
      d. the pronoun.
      e. the infinitive.
   2. The modifying phrase, finally distinguished:
      a. prepositional phrase.
      b. participial phrase.
      c. infinitive phrase.
   3. The modifying clause:
      a. form (resembles a sentence).
      b. parts (subject and predicate).
      c. base.
      d. modifiers.
      e. connecting force of one of the parts.

VI. The modifiers of the base of the predicate:
   1. The modifying word:
      a. adverb.
      b. noun.
      c. pronoun.
      d. infinitive.
   2. The modifying phrase:
      a. Prepositional phrase.
      b. Infinitive phrase.
   3. The modifying clause:
      a. form.
      b. parts.
      c. base.
      d. modifiers.
      e. the connective force of one of the parts; or, the separate connecting word, the conjunction.

VII. Compound sentences:
   1. form.
   2. connective type words, *and*, *but* *or*, *therefore*.

VIII. Independent elements:
   1. Word:
      a. interjection.

  - b. expletive.
- 2. Phrase:
  - a. short phrase, *'to be sure.'*
  - b. long phrase, *'The day being bright,'* we met.

SUMMARY.

- I. Feeling of sentence unity (the whole).
- II. Value of sentence parts (subject, predicate, and modifiers).
- III. Meaning of sentence elements (parts of speech).

GRAMMAR.

EIGHTH GRADE.

A. Review of work outlined for seventh grade, and sentence analysis based thereon.

B. The detailed study of the parts of speech, to fix:
  1. The different forms of each (noun, pron., adj., adv., verb).
  2. The correct use of the forms.

This requires:
  1. Tabulation of forms in each case (declension, conjugation).
  Recognition of differences in meaning or in use (properties), more or less shown by form.

- I. The noun and pronoun:
  - 1. Forms, to show:
    - a. person, b. number, c. gender, d. case.
  - 2. Kinds: a. common, b. proper, c. personal, d. interrogative, relative, etc.
- II. The adjective:
  - Forms to show comparison, degree of quality.
- III. The adverb:
  - Forms to show comparison.
  - Forms to show, a. person, b. number, c. tense, d. mode, e. voice.
- IV. The verb.

NATURE STUDY.

Nature study is variously defined. It is often misunderstood. It ought here to be stated that it is not merely to cultivate the power of observation, or to appeal to the æsthetic sense, or to furnish material for correlation with other subjects, though this end may and ought incidentally to be attained. Neture study is to develop an attitude of mind. The teacher is so to direct the child mind in its ceaseless reaching out after knowledge of objects in the material surroundings that, as a result, the child will live with nature as with a friend. Between the two there is to be a sympathetic contact. To realize this end most completely requires the fullest development of all the powers of the child in so far as they may be influenced by contact with material objects. And on the part of the teacher it requires the same close contact with nature, and the same friendly intercourse with that toward which the child is to be directed.

FIRST GRADE.

FALL TERM.

Flowers.—Identify as many as possible of the common wild flowers, as golden rod, aster, evening primrose, wild sunflower. And in the same way, learn the names of the commoner cultivated flowers, as geranium, salvia, petunia, dahlia canna, poppy, etc. Similarly learn the common weeds, such as smartweed, ragweed, pigweed, milkweed, wild carrot, wild parsnips, lambs' quarters, etc. At the same time, while excursions afield are being made, there may be undertaken a study of—

Seeds.—These should be collected, noting number produced by single plant; how protected, etc. Seeds may then be stored for study on rainy days. Abundant material for story work. Such forms as milkweed, burdock, stick-tight, thistle, etc., are suggested.

Trees.—Oak, maple, linden, elm. Begin with forms most familiar to children. Become familiar with their general shape, whether tall or low, broad or pointed, etc. In study of oaks, after studying one form, as red oak, proceed to another, as burr oak, and make careful comparisons, noting differences. Return then to the former to note any previously undiscovered points of similarity or differences. Cultivate in this work the habit of comparing the trees with one another. Attention may be centered about the shape of the tree, color and appearance of bark, shape of leaf and fruit. Collect fruit of each; collect leaves to study coloring. Make leaf chart. Make survey of landscape conditions at the beginning of each month.

The Squirrel.—Shape, size, color, etc. How it climbs a tree. How it runs on the ground. What and how it eats. Where it builds its nest. The preparation it makes for winter. General preparation man makes for winter. Harvesting of corn; vegetables stored in cellar; hay and food for cattle in barn; ploughing for seeds to be sown next spring. Why such preparations are made. Visit a barn and make observations.

Study of pumpkin as one of the farm products. Make a tsudy of this object with a special reference to its symbolism of the season of Thanksgiving.

Reason for giving thanks.

Rain.—Associate with clouds. Value of rain. Why necessary? Exists also as snow and ice.

After leaves have fallen, make excursion to compare pine trees with three trees previously studied. Reason for use of term "Evergreen." Use of Evergreen as Christmas trees. In connection with the approaching Christmas season, study from picture and story the reindeer as entering largely with the Santa Claus stories.

WINTER TERM.

These lessons are not very largely concerned with physiology. The experience of children in the Primary Grades is not such as to enable an understanding of physiological processes. And yet they are daily forming habits of living which no amount of instruction later in life can thoroughly change if wrong. Certainly their effect cannot be changed. These lessons are designed to begin with the daily experiences of the child and upon them and through them to influence his habit. Any instruction is worthless unless it passes over into conduct. Physiology is not a part of the primary child's experience. He has not yet reached the age of reason. His conduct is largely imitative, and his habits the result of early influences. Upon this basis these lessons are to be developed.

The Child's Welfare and Happiness.

How animals keep warm.—Fur bearing (cat, dog, sheep. etc.). Feathered (chicken, canary, etc.). Shelters (burrows, nests, holes in trees).

Use we make of animal coverings to keep us warm.—Skins as clothing (shoes, hats, mittens, muffs, coats, cloaks).

Use of feathers (boas, feather beds, down quilts).

Clothing made of hair (woolen cloth).

Other ways in which we keep warm—houses, furnaces, stoves (what we burn in them), bedding, underclothing (need of keeping them clean).

Ways in which we can get warm if we are cold—running, clapping hands and swinging arms; taking hot food or drink, blow hot breath on fingers, rubbing, hot bath.

What to do if we get too cold (frost bitten)—cold water on cold hands or feet—snow on "frost bites"—rubbing of chilled parts. Danger of severe freezing of toes or fingers.

Ways in which we can keep cool when warm weather comes—change clothing, fan ourselves, keep in shade in cool places, avoid violent exercise, keep house cool (keep out sunshine). Raise windows, etc.

In leading the child to think of these things in so far as possible let his own experience and observation furnish the material.

Some other necessities to our happiness—food, friends, (parents, brothers, sisters, playmates)—toys, games, pets.

Food—Best kinds of food (bread, milk, cereals, occasional egg, vegetables, fruits).

Food to be avoided (coffee, tea, meat, cake, etc.).

Best way to eat (chew well, warm cold liquids in the mouth, not eat too much).

Best time to eat (regularly at meal times and not often between meals; not when very tired nor after severe exercise).

Preparation for eating (clean hands and face).

What to do at table (use of knife, fork, spoon; manner of asking for food; leaving the table).

What to do after eating (wash hands and face and rest fifteen minutes).

How to eat the food (chew well; keep mouth closed; use of teeth; care of teeth).

What the food does for us (keeps us warm; gives us strength).

Friends.—Who are our friends? (parents, relatives, playmates). Why do we need them? (parents' care, someone to play with, etc.). How should we treat them? (kindness, unselfishness, love).

Toys.—Care of toys. (Have children name them and discuss their care.) What to do with them after playing (put away carefully—habits of orderliness and neatness).

Games.—Favorite games—Why? When to play (not immediately before or after meals). How to treat playmates. Dangers in playing (too near water, ice, etc., or too violently).

Pets.—What are your pets? How do you care for them? How are they useful? How do they give pleasure?

Note.—At the discretion of the teacher there should be introduced suitable gymnastic exercises and instruction in proper sitting, standing, breathing, etc., and correction of bad habits of various kinds to the end of helping the children to form good habits.

Nature Study.

Germination of seeds.—Plant seeds of lima bean or corn in moist sand or sawdust. Watch process of germination. Lead pupil to see that the seed is a little plant, protected by a coat or jacket. Find out what conditions seeds require to germinate most rapidly. Plant seeds of flowers and vegetables which require transplanting before being placed in the garden.

SPRING TERM.

Continue monthly resume of landscape and out-of-door conditions. Study buds of maple, elm, linden, oak, etc., to the end of discovering what is in the bud. This can be done by placing twig in water and allowing the buds to develop. The bud is a little branch with leaves, and in some cases, flowers, present in a rudimentary condition. Protection of these tender parts.

Spring Flowers.—Identify as many as possible; as dandelion, spring beauty, trillium, jack-in-the-pulpit, oxalis, violet, buttercup, etc. Follow the development of the cherry from the blossom to the fruit. Not, however, with the aim of learning the names of the floral parts, but simply to discover that the beginning of the fruit is a flower. Begin work on the garden. Let it be the nucleus for the nature work of the remaining weeks.

SECOND GRADE.

FALL TERM.

Wild Flowers.—Review the flowers learned in the previous grade and study such others as are commonly met with, giving especial attention to the clovers.

Cultivated Flowers.—Review the flowers learned in the previous grade and identify all the cultivated flowers on the campus. Fruits. Maple, box elder, catalpa, linden, rose hip, thorn apple, wild cucumber, poppy. Attention should be directed to the fact that the beginning of the fruit was a flower. In an elementary way discuss the functions of the fruit. With the thorn apple compare the cultivated apple and the crabapple.

Continue as in previous grade the monthly survey of landscape conditions.

Common Vegetables.—Turnip, carrot, radish, parsnip, rutabaga, onion, potato, cabbage, egg plant, pepper.

Horse.—Usefulness. Things the horse does for man. What could man not do had he not the horse? Care. The legend of how the horse was tamed. Read selections from "Black Beauty."

How a horse is protected in winter.

Common Grains.—Identification of wheat, rye, oats, barley, millet as plants. Identification of grain of each; preparation of each for use of man. Use of each.

The Thermometer.—Effect of heat on size of solids and liquids. Freezing, zero and boiling point on the thermometer. Measurement of heat. Make hourly observation on temperature. Construct graph from observation. Obtain data from nightly temperatures and construct graph in the same way.

Study of a bird.—Bluejay suggested. Shape, parts (head, bill, breast, wing, tail, legs, beak), color of each part, food, habits, song.

WINTER TERM.

The Child's Home.

Homes of animals—burrows, hollow trees, nests, etc.

Homes of pets—kennels, barns, bird houses, cages, etc.

Homes in which we live—of what constructed. Rooms and purposes of each. Location of house. Homes of other people. (Esquimaux, Indians, warm and cold countries).

Care of the home—Cleanliness (clean shoes; shake dirty clothing before entering).

Sunshine (comparison with plants growing in dark).

Fresh aid day and night. How?

What to do in case the house catches fire.

THE CHILD'S BODY.

How some animals care for their bodies—cat, dog, bird.

How best to take care of our bodies—cleanliness (when and how to bathe).

Sunshine (in houses as well as out of doors).

Fresh air (how obtained at night, deep breathing; exercise in proper breathing).

Sleep and rest (number of hours of sleep; conditions for refreshing sleep—fresh air, not too much bedding).

Good food—Review foods outlined for first grade (those best to eat; those to avoid; care in eating properly; care of teeth).

Cheerfulness—Good temper makes food do us more good, bad temper makes us unhealthy.

How to care for the body in case of accident—clothing afire, burns, cuts, bruises, bee stings, mosquito bites.

NATURE STUDY.

If possible keep a tame rabbit in a cage in the room. Encourage the children to determine for themselves the needs of the rabbit, as food, drink, etc. Note how he eats and drinks. How he gets about. Look for tracks of wild rabbits. Harm they do to trees and gardens.

How to attract winter birds, with especial reference to chicadee and woodpeckers. Have the children make their own observations on size, color, habits, and call of birds.

Plant seeds of such garden vegetables as are to be used in the work of the primary garden, as tomatoes, peppers, ground cherries. Plant seeds of flowers which are to be transplanted into the garden, as pansy, chrysanthemum, asters.

Twigs. Note arrangement and difference in size of the buds. Where are the large ones? Place twigs in water and allow buds to develop; study, making appropriate sketches.

What was in the buds? What are the scales for? Study buds on other shrubs and trees. Learn to identify them by their twigs. Watch for returning birds. Begin bird calendar. Collect as many facts as possible concerning each bird observed.

SPRING TERM

Continue observations of birds with particular reference to the robin, bluebird, grackle, red-winged blackbird, meadow lark, goldfinch, redheaded woodpecker, flicker, scarlet tanager, song sparrow.

Identification of common spring flowers. Blue violet, spring beauty, bloodroot, jack-in-pulpit, dutchman's breeches, dog-tooth violet, anemone, buttercup, wild geranium, trillium, oxalis, (pink), oxalis (yellow). Develop appreciation of wild flowers and care in picking.

Observation on blooming of willow (pussy, elm, and soft maple). Observe color, number and arrangement of blossoms; follow their development into ripened fruit. Note adaptations of fruit for dispersal. Plant some seeds of each. Note manner of breaking through soil. What advantage is in such a method?

Direct attention to the fact that a yellow powder is produced, called pollen. Do all the flowers produce pollen? Show that the pollen is necessary for the development of the blossom into a fruit.

Garden making. Transplant seedlings reared indoors into suitable receptacles. Prepare soil of garden plots for planting. Prepare plans for the plot. Plant seeds at such time and under such condition as advised by instructor. It is advised that with this grade such seeds be planted as mature quickly, such as radish, lettuce, particularly onion sets; transplant pansy and tomatoes. Of flowers; nasturtium, morning glory, and poppy. Plant gourds and pumpkin for fall study.

THIRD GRADE.

FALL TERM.

Inspect gardens. Gather such vegetables as are mature and pick flowers for school-room decoration or for distribution to sick schoolmates or friends. Gather and store poppy and nasturtium seeds. Pick and prepare gourds for drying. When ripe, pick and store pumpkins.

Butterflies and moths. Collect larvæ of monarch and cabbage butterfly, and bring to pupation in breeding cages. Follow life history of monarch, noting, if possible: moulting of larva, entrance into pupa stage, and emergence of the adult. Keep records of the changes. Store chrysalis of cabbage butterfly, placing it in a box in a cool cellar. Look on tomato vines for "tomato worms," feed in breeding cages containing a layer of earth in bottom. Compare further changes with those of monarch. If possible, keep pupa until adult emerges. (Soil must be kept moist). Along with field work on these forms make observations and identify such other butterflies and moths as are most easily obtained. The larvæ of other forms may be bred and pupa obtained as above suggested. Note economic importance of larvæ of forms studied.

Note flocking of birds for migration, such as crows, grackle. Look for migrating flocks of ducks and geese. Why do birds migrate? Give many reasons.

Corn. Study plant, noting size of stalk, shape and position of leaves, roots, the tassel, ear. The tassel is a blossom which produces pollen. The ear of the corn is the fruit. Uses of corn stalks as food for cattle, and of corn as food for man and domestic animals. Comparison of corn with grains studied in second grade. Different kinds of corn; field corn, sweet corn, and pop corn.

The cow. Man's dependence on the cow. Use made of milk in manufacture of butter and cheese, necessity in cooking, bread and milk, etc. Various uses of hide, hair, horns, hoofs, meat, suet, bones. Make butter, soft cheese and ice cream. Care of physical needs of cow—shelter, food, drink, salt, kind of treatment. Insect pests of cow. How protected against them.

WINTER TERM.

THE BODY USEFUL.

Various bodily activities—occupations and plays—parts of the body used in various occupations, games, etc. Names of parts (head, trunk, limbs, etc.).

How our activities are guided—Sight (eye, care of); Hearing (ears, care of); Touch (where most sensitive?).

The importance of these senses may be emphasized by assuming the loss of any one. They help us to avoid certain things (What?). And to enjoy others (What?).

Other ways in which the body tells us about conditions outside—Smell (the nose); taste (the tongue); sanitation of nose and mouth, habits of putting fingers in nose or mouth; use of handkerchief; need of cleanliness to avoid disease and possibly death. These habits, too, help us to avoid bad food and to enjoy pleasant food and odors.

How to make the body strong and most useful—good food, good habits, good temper, self-control over appetite, temper, parts of the body. Good mind to think with and tell us what is best for the body to do.

Some things which weaken the body and make it less useful—Tobacco (statement of facts only, with little or no attempt to explain).

Coffee (Why?). Tea.

Alcohol (report on action of railroads and business men who will not employ men who drink or smoke. They are not useful. Abundant material is available).

Overeating.

Disease.

Accidents which may happen to the body; how to care for it then.

Drowning (demonstrate and have children do the same).

Fainting.

Poison ivy—Bites of dogs.

Review previous emergencies.

Stories of men who have used the body wisely and have lived long and useful lives.

NATURE STUDY.

Water.—Its uses to man. To plants and animals. Value of pure water. How to purify by boiling.

Where water comes from—earth and sky.

Evaporation of water. Experiments to demonstrate condition affecting evaporation. Condensation of water vapor on cold surfaces. Rain, snow, hail, etc.

Freezing of water—temperature, expansion during. Ice lighter than water. Why this is a good thing.

Demonstration of three states of matter: solid, liquid and gas.

Spring birds. Review birds studied in previous grades and continue observation. Following suggested: Ivory woodpecker, hairy woodpecker, nuthatch, brown creeper, bluebird, junco, etc.

Plant seeds in hot-bed or boxes, such flowers and vegetables as plans for garden demand.

THIRD GRADE.

SPRING TERM.

Continue observation on returning birds. In connection with each bird, encourage children to observe the flight, walking or running, food, and nesting habits. If possible, keep under observation a nest of birds, noting number of eggs, time of incubation, condition of young when hatched, how and what young are fed, length of time before young leave nest. Meadowlark, flicker, red-headed woodpecker, cowbird, sandpiper.

Dandelion. Elementary study of the flower (floret, receptacle, scape). Observe history of the flower from bud to fruit, with appropriate notes and drawings.

Identify more common unfamiliar wild flowers as, columbine, mandrake, anemone, buttercup, phlox, shooting-star.

Life history of frog and toad. Collect spawn and study various stages in larval life, and from captured tadpoles of previous season. Observe changes during metamorphosis. Economic importance of toads and frogs. Enemies. This work may be accompanied by suitable sketches and descriptions.

Keep calendar of leaf appearance on common trees, when leaf first appeared and when full grown.

Identify the more common butterflies as, mourning cloak, red admiral, sulphurs, cecropia moth, luna moth, sphinx moth. Habits of obtaining food. Correlate with work done during fall term.

Preparation, planting and care of garden, with especial reference to fertilizing soil, and insect enemies of the garden as: cut worm, squash bug. Plant flax, wheat, potatoes and peanuts. Plant such flowers as seem most advisable, chrysanthemums, asters, etc.

Transplant tomatoes and flowers and see that plants are cared for.

Let the garden be the center of interest for nature work.

FOURTH GRADE.

FALL TERM.

Report of summer outings: nature discoveries and experience.

Examine the garden. Make proper disposition of the garden produce. Make a special study of the flax as regards the manner of production and the various uses made of it. Carry through the various processes by which the fiber is obtained, and study how it is made into cloth. Study the wheat to determine its manner of production and its uses.

Identify as many of the fall flowers as are familiar. Note the fruits each produces and the adaptations to seed dispersal in the case of each plant. Collect specimens, dry and mount. Show with each a specimen of the fruit and a seed.

Plant oak, black walnut, hickory, etc., in garden. At proper time plant and care for such bulbs as seem advisable to be made use of by the grades.

Make a special study of the gopher. Obtain one or two live specimens and keep in cage in the room, noting facts about structure and habits and when thoroughly acquainted with these, allow the animals their freedom. These specimens must be obtained very soon after school opens in the fall. Study then the economic relations of the animal. How can it be destroyed, if it seems that it would be better to destroy it?

Make a special study of a few wild animals, such as the wolf, fox, rabbit, bear and deer. Let these studies be to acquaint the pupil with the habits and distribution of these forms. Are they beneficial or injurious? Why? What can we do to destroy or protect them.

References: Hornaday's American Natural History.
Stone and Cram's American Animals.
Seton's Mammals of Manitoba.
Library of Natural History.

Study the principle of the thermometer. Effect of heat on the size of solids or liquids. How does this operate in the thermometer? Determine the freezing, zero and boiling point on the thermometer. Make hourly or daily observations on the temperature. By consulting the papers find the temperature for the night also and construct a complete graph for the day and night. Learn to interpret accurately.

WINTER TERM.

I. Review work of previous grade on "The Body Useful."

The Efficient Body.

II. Habits of life determine the efficiency of the body.
Long hours of work without proper rest in time make the body weak and incapable of much work.
The person who constantly eats too much in time injures the organs of his body and he becomes diseased and his body useless. Habitual use of cigarettes or alcoholic drinks in time weakens both body and mind.
Careful habits with reference to eating, sleeping and taking of out-of-door exercise, together with a cheerful disposition and something to do, keep the body strong and well and hence more useful.

III. What are the habits which are best for the body? How can we make it strong and ready to do work for us?
A. Habits of eating.
Kinds of food: Bread, milk, potatoes, fruit, cereals, etc.
When to eat: Regularly; not often between meals.
How to eat: Slowly; chew food well; mix well with saliva. Stop while a bit hungry.
Functions of various organs and secretions.
Saliva: Where produced; number and location of glands. Necessary for the proper preparation of the food for the body. Do not attempt to explain the chemistry of its action. Chewing gum uses the saliva which ought to be ready to mix with the food.
Constant spitting wastes it.
Teeth: Kinds of. Parts of a tooth. Use specimens. Care of the teeth. Impress the value of the teeth. Have regular examinations by competent dentist; fill cavities promptly. Poor teeth mean poor food etaoin shrdlu promptly. Poor teeth mean food poorly prepared for the body, hence a body unable to do its best work.
Stomach: Food after leaving the mouth passes through a tube to a sac called the stomach. Locate it. Here the food is further prepared for the body. We say it is di-

gested. In just what this process consists we shall study in another grade.

Pain in the stomach often results from overeating, or eating the wrong kind of food, such as the stomach cannot properly digest. The stomach tells us if it is not treated properly. Learn how to care for it so that it will help to keep the body strong and well.

Sleeping: Why we need sleep. Regularity in hours of sleeping. Number of hours required. Short "nap" after dinner advisable. Sleep in well-ventilated room, with windows open.

Exercise: Play the best form of exercise, when in the open air. Good games to play. Do not exercise severely directly after a meal or directly before a meal. Rest after violent exercise taken just before meal time. Violent exercise too long indulged in may permanently injure the body. Forms of healthful exercise: Walking, running, games, skating, swimming (not in water too long), baseball, etc.

Care of special parts of the body:

The eye, delicacy of; how to read; simple precautions to be observed in order not to injure the eye.

FOURTH GRADE.

SPRING TERM.

Garden work. Plant and make proper disposition of the cotton, peanut, sweet potato. In the larger class plots plant wheat and oats.

Keep records and observations on returning birds.

Make special study of the woodpeckers as a group of birds.

Use prepared outline for suggestions and references.

Make special study for purposes of identification of the shrubs found on the campus. This will include, of course, such wild forms as are found in the woods, as well as the cultivated ones used for decorative purposes.

Keep careful records of conditions out-of-doors, as determined by occasional excursions. The object is to make the pupil sensitive to the rapidity and extent of the spring awakening.

FIFTH GRADE.

FALL TERM.

Gather garden produce, and make such distribution of same as is desirable. Be watchful for the effects of insect ravages. In case such results are found, determine, if possible, what insect is accountable for them.

Weeds.—A weed has been defined as a plant growing out of place. It is evident, then, that there are many such, and, as in the case of birds and trees, it is worth while to be able to call them by name. Many are serious pests; one needs to know about them.

Interest may best be aroused by making an excursion for the purpose of obtaining some idea of the great diversity of plants found growing where they are not wanted. Then establish the motive for the work to follow as the purpose to know some of these plants by name, and the way in which they get on in the world. Field excursions, always carefully planned, enable each pupil to collect specimens. Note with reference to each week the place in which it grows, such as, for example, in cultivated or waste places; the manner of growth, whether erect or on the ground; is it common or uncommon? etc. Let each pupil collect two specimens. One may be pressed by placing between paper and applying board topped by a heavy weight, the other may be reserved for study indoors. Here make observation on the distinguishing characteristics of the plant. Such are: the shape of the leaf, character of the leaf, whether smooth or rough, character of the stem, whether woody or fleshy, smooth or rough, angular or round. If the blossom be available, note its color. The essentials are: to learn to recognize the plant, to get sharp, clearly defined notions about it so that comparisons may be made with others. Thus a working vocabulary is obtained. The fruit and seeds should be obtained, and the latter studied so that it may be recognized. Note and adaptations for seed disposal. Are few or many seeds produced by a single plant? How may the seeds be recognized? Learn the common names or name.

The pressed and dried specimen should be attached to a suitable cardboard sheet (either by gluing it fast or by the use of gummed strips) and these sheets then bound into a "Weed Book." Fruit as well as the seeds obtained from them may be mounted on the same sheet.

Should the plant studied be a serious pest it is worth while to study any methods of eradication which are known to be successful. If it have any economic importance or a useful plant in any way learn what such may be.

After the laboratory work has been done on each plant, frequent reviews of the points may be made. Place a topical outline on the blackboard and let each pupil recite on some one topic and finally make of the whole a language lesson wherein each writes an account of what has been found out about the plant. Let this be incorporated into the "Weed Book" as the pupil's effort to organize what has been found out about the plant.

In such studies care should be taken to stimulate the pupils to careful observation and accurate statement of facts. Comparisons of one part of one plant with corresponding parts of another are helpful in the effort at careful observations.

Animal Studies.—At the age of the children of this and the succeeding grade interest in wild life is especially strong. Stories and studies in the life of our larger wild animals, such more especially as may frequently be met with in tales of adventure, are not only satisfying but may advantageously be made use of as a basis for language lessons.

The bear, deer, fox, and wolf are familiar in adventure and story. Study such, determining the general characteristics, habits and distribution of the forms. Read or allow the pupils to read stories concerning them, after determining the facts above indicated.

References: Language material may be drawn from these studies.

Bear: John Bear, Thompson Seton; Lives of the Hunted, The Biography of a Grizzly, Thompson Seton; Life Histories of Northern Animals, Seton, Vol. V, p. 1030; The Black Bear, W. H. Wright; The Grizzly Bear, W. H. Wright; American Animals, Stone and Cram, p. 255; American Natural History, Hornaday, p. 39.

Fox: Life Histories of Northern Animals, Seton, Vol. II, p. 706; American Animals, Stone and Cram, p. 264; American Natural History, Hornaday, p. 25; Reynard the Fox, The Bear and the Fox, Asbjornsen; Fairy Tales From the Far North.

Wolf: Badlands Billy in Thompson Seton's Animal Heroes, Tito in Thompson Seton's Lives of the Hunted; American Animals, Stone and Cram, p. 277; American Natural History, Hornaday, p. 22.

Deer: Life Histories of Northern Animals, Seton, p. 68; The Deer Family, Roosevelt and others; American Animals, Stone and Cram, p. 34; American Natural History, Hornaday, p. 128.

Bison: Life Histories, Seton, p. 247; Buck-ox, Bison, Sheep and Goats, Whitney and others; American Animals, Stone and Cram, p. 66; American Natural History, p. 101.

PHYSIOLOGY AND HYGIENE.

WINTER TERM.

The Body at Work.

I. The framework of the body,—the skeleton.

Have the pupils feel the bones in the arms, fingers, and such others as can easily be located. Give names of them, and by reference to charts and diagrams learn others.

Teach the essential facts concerning the structure of the bones, emphasizing the fact that they are in part made up of living cells. Simple examinations on the gross structure of bones will yield ideas useful in further studies.

The functions of the bones should be clearly brought out as: to give shape to the body, protect the vital organs, furnish an attachment for the muscles, and, by serving as levers, increasing greatly the range of movement producible by the muscles.

Emphasize the deformities which may result in the vertebral column by improper habits of sitting at the desk. Value of erect posture in giving the internal organs free play in the performance of their functions.

II. The muscles.

By feeling of the upper arm locate and determine something of the shape and attachments of the biceps muscle. Note the change in its shape as it contracts and expands. Study the make-up of the muscle in an elementary way, and the changes in the shape of the cells during contraction and expansion.

Locate and name some of the more obvious muscles as: the pectoralis major, the triceps, deltoid, etc.

The tendons serve to attach the muscles at their insertion and permit movement over joints where the muscles would be cumbersome. Feel those in the wrist and fingers.

The effect of exercise on the muscles. The effect of using them too much without rest.

III. The joints.

The joints permit the bones to move one on another, and thus make motion possible. Study the kinds of joints with the advantages of each. Parts, as cartilages and ligaments.

The injuries of joints, such as dislocations and sprains, and what to do for them until the doctor comes.

IV. The digestive system and the work it does.

The energy which runs the body is derived from the food eaten. Such energy cannot be obtained until the food is *in* the body. Running through the body is a tube made up of various parts such as: the mouth, oesophagus, stomach, etc. Food taken into this tube is not yet a part of the body, being separated from it by the walls of the tube. Evidently to become a part of the body it must pass through these walls and in order to do so must be reduced to a liquid. How is this accomplished? The answer is found in the action of the various digestive fluids produced by the glands which pour their secretions into this tube or from glands within the walls of the tube itself.

Emphasize the action of these fluids in making the food soluble, so that it *can pass through the walls* of the tube into the body. Herein is the whole principle of digestion.

Demonstrate the action of the saliva on starch and the gastric juice on meat or white of an egg.

Effects upon the process of improper habits of eating, or of irregular habits of eating. Overeating may derange the effectiveness of the process.

Regularity should be established in voiding the undigested residue from this tube.

Absorption: Consists in the passage through the walls of the digestive tract of the foods now rendered soluble. It is then in the body and must be distributed to its various parts. This necessitates some carrying medium and leads to the study of the circulation in which the fate of the foods thus absorbed may be dwelt upon.

FIFTH GRADE.

SPRING TERM.

Topics for study:

I. Bird Migration.

II. The woodpeckers of our locality.
The pupils find out all they can from their own observations as regards markings and habits of the different species. Stimulate them to be independent in their search for facts. Do not hasten to books, and leave the real living bird out of consideration.

III. Identification of common wild flowers. Develop the desire to protect them and not to pick all possible.

IV. Garden activities.

SIXTH GRADE.

FALL TERM.

I. Gather and make such distribution of the garden produce as is advisable. Be watchful for insect ravages. If such be found determine if possible the insect accountable for it.

II. Make a special study of the spiders; more especially those known as the orb-weavers. Of these there are three species, all abundant at this season, and each different from the others in its habits, as well as in its size, color, markings and manner of making its web. As an introduction to the problem take the class on a field excursion, and let it be understood that the purpose is to find as many different kinds of spiders as possible. Previously locate some typical webs and spiders of each kind, and take the class to them. Stimulate their interest in these forms by asking them to note any differences either in the spider or the web. Do not hasten the studies to a conclusion. Endeavor to obtain from the pupils *first-hand observations.* Let these be recorded and discussed so that each pupil feels the thrill of discovery. After the interest is well aroused, let the pupils raise problems with reference to the spider. Such might be, how does he get his food? How does he eat it? How does he protect himself from his enemies? What are his enemies? How is the spider tribe carried over winter?

After a time the pupils will come to handle the animals without fear. Their bite is not very poisonous, if at all. But if they be handled with the whole hand, that is, within the closed hand, they cannot bite through the thick skin of the palm. They may also be grasped by the abdomen. Collect a few mature specimens, and enclose in a good-sized box with a screen over the open side. Here they will spin a web. Place but one specimen in each box, as they will kill each other. Flies and other insects may be thrown into the web and the spider's activities carefully observed. Let the children find out what the spider does.

Interesting discoveries on the anatomy of the spider may be made. Where are his eyes? How many are there? Are they all alike? How many legs has he?

What adaptations has she (for the large spiders are females) for enabling her to cling to the web? Examine the foot under the microscope. Where does the web come from? Find out about the spinnerettes.

Observations on the habits of the animals yield interesting results. Each has her characteristic way of building her web and of disposing herself in it or near it. Let the children find out as many such facts as they can. When their powers are exhausted help them to observe further. Let the pupils make sketches of the webs and even of the spider in it.

During the studies of the animals interesting stories of spiders may be read. Other kinds of spiders, such as the burrowing, trap-door and hunting spider, may be studied. The latter are common on fences.

Watch for the "ballooning spider." For a few days in the fall the air seems full of spider webs. If carefully watched for, spiders may be found on the ends of twigs, on fences and tall weeds, with abdomens upturned, spinning the long threads preparatory for sailing away.

Find some of the egg cocoons. Examine one. Learn something of the fate of the young spiders when they hatch.

Wherever possible use the materials thus brought together as language material.

Much like the spiders are the "daddy-long-legs" or "harvest men." Collect a few specimens, and compare with spiders as regards parts of the body, number of legs, positions of eyes, etc.

Find out what they live upon. How do they catch their prey? Examine the mouth parts with a lens. Better remove from a chloroformed specimen the cheliceræ and mount on a slide. By setting a problem stimulate the pupils to observe for themselves and so far as possible solve their own problems.

SIXTH GRADE.

WINTER TERM.

THE BODY AT WORK.

I. Thoroughly review the work of the previous grade. This includes a review of the process of digestion, the essential principle of which is the rendering of the food into a soluble condition so that it may pass through the walls of the digestive tract. Passage through the wall is absorption. It remains now to trace the food after the passage. But the significance of the food to the body can have meaning only as it relates itself to those processes by which life is maintained. This is explainable only in terms of energy. Hence the difficulty in its treatment with a class of children. However, with carefully planned and executed demonstration and with abundant illustration in which emphasis is laid on the *essential* and *fundamental* idea, notions can be given which make possible the understanding of the problem.

The fundamental facts are that the food is utilized by the body for (a) repair of waste, (b) production of new tissue, (c) oxidized to liberate energy (manifested in heat, motion, and maintenance of the vital processes of the cells of the body). The latter of these functions is basic and therefore needs especial attention. To its understanding some conception of the meaning of "energy" and "oxidation" is essential. The idea expressed by the word *energy* is that of the power of doing work. Heat is a form of energy since it may be used to make steam and it in turn to cause the steam engine to do its work. Electricity is a form of energy. So also is light. Now the idea should be made as clear as possible and in many ways the notion should be developed that the body is continually using up energy. There are many ways in which it does so, (a) in movement, (b) in keeping the temperature constant, (c) in vaporizing liquid from the skin and lungs. Then the question may rightly be asked—What is the source of the energy? This leads to the fundamental notion of respiration.

The energy of the body is derived from the oxidation of the food absorbed, and, in some cases, assimilated. This process of oxidation requires oxygen. The oxygen is obtained from the air through especial organs, the lungs; transplanted by the blood to all parts of the body where the union with the various compounds in the tissues takes place, releasing energy, which the body uses in all of its vital activities, and producing wastes, which must be eliminated. This conception is fundamental. To enable the body thus to get energy are the processes of digestion, absorption, respiration, and, secondarily, excretion, carried on. Hence, it is essential to know something of what oxidation is. This may best be developed by some simple demonstrations, briefly outlined as follows:

1. Idea of what oxygen is, of its presence in the atmosphere. Show a bottle of oxygen.

2. Idea of the union which may take place between oxygen and other things, as for example, wood. Burn a piece of wood in a bottle of oxygen. This union of oxygen with wood results in heat, and light—energy.

3. Burn other substances in oxygen, such as sulphur or iron. The union of any substance with oxygen results in freeing energy as heat or light. It is oxidation.

Burn a candle in an open jar. Close it tightly. Why does the candle go out?

In these demonstrations proceed slowly and be sure each pupil understands the significance of each step.

Then apply the principle thus developed to the processes of the body. The energy of all our bodily and also mental activities is obtained by the oxidation of certain substances, derived from the food.

With these concepts as to the part played by the food in maintenance of the bodily energies, we are prepared to understand the necessities for the circulation of the blood, the carrier and distributor of the food. All the tissues of the body require food for the three purposes above enumerated. Ho is it taken to them from the wall of the digestive tract? This leads to the *Process of Circulation.*

Have the pupils feel the beating of the heart and the pulse in the wrist or neck. By means of chalk and diagrams and, if accessible, a manakin, teach the chief parts of the system of circulation, the arteries, capillaries, and veins. Trace the food from the intestine to the heart (through the thoracic duct), thence to the tissues.

Now another problem presents itself. Where does the oxygen come from which is to unite with certain of these food compounds? This leads to the function of the blood as a distributor of oxygen as one of the phases of

Respiration. But another equally important problem remains. After the food is oxidized certain wastes remain.

Repeat the demonstration of burning wood in a bottle of oxygen.

Produce carbon-dioxide by adding acid to marble chips, and lead the gas into limewater. Note the change it produces. This is a characteristic change and is a test for the gas.

Put some lime water in a bottle in which the wood was burned. Shake. What gas is present? Blow the breath through a glass tube into a beaker of lime-water. What gas is present in it?

We have then to study the functions of the blood in removing the waste carbon-dioxide from the tissues and its expulsion through the lungs. This taking in of oxygen, and giving off of carbon-dioxide is respiration. But back of it all is the necessity imposed upon the body for the release of energy by the oxidation of the food and tissues. This alone can give meaning to it.

Other wastes than carbon-dioxide are found in the body, one of which is water, and the other urea. These need be but briefly dwelt upon, but it is essential to understand that they are carried by the blood to the kidneys, by which organs the water with urea in it is taken from the blood and passed into the bladder, from which it is periodically expelled. A cessation of the process for even a few hours means death. This elimination of water and urea is known as excretion.

It must be understood that in teaching these principles to children the extremest care must be made to reduce the processes and relationships to their simplest terms. Proceed slowly and use abundant illustration suitable to the understanding of the class. *Set up the problems,* or, better still, lead the class to do so, and then work out the solution of the same.

SIXTH GRADE.

SPRING TERM.

Birds of Prey. Hawks and Owls.

Use as typical common forms the red-shouldered hawk and the screech owl. Determine habits of nesting, rearing of young and food supply of the group. Judge their economic importance.

Birds of Prey.

References: Birds of Prey; Yearbook, Dept. of Agriculture, 1894, Hawks and Owls from the Standpoint of the Farmer.

Maple Sugar.

Method of tapping trees, collecting sap and making sugar. What is the sugar as far as the tree is concerned?

Reference: U. S. Dept. of Agriculture, Farmer's Bulletin No. 52.

Identification and study of trees in winter conditions.

Outline form, branching, bark pattern, buds, twigs, etc. Collect twigs, mount on cardboard with appropriate identification.

References: Identification of Trees in their Winter Habit; Newell's Outlines of Lessons in Botany.

Identification of wild flowers, shrubs and other out-of-door plants.

References: Hodge's Nature Study and Life; Lodeman's The Spraying of Plants; Saunder's Insects Injurious to Fruits; Farmer's Bulletin No. 127, "Important Insecticides."

Varities of fruit trees.

Production of sugar from beets.

References: U. S. Dept. of Agriculture, Farmer's Bulletin No. 52.

Garden Activities.

SEVENTH GRADE.

FALL TERM.

Collect and identify as many moths and butterflies as possible. Be careful to collect only so many specimens as are necessary to make identification by the whole class easy. Exceptions, of course, are to be made in the case of injurious forms like the Cabbage Butterfly. Specimens should be carefully spread and dried and the best specimens mounted in forms provided. Whenever possible obtain larvæ and secure the chrysalids.

Secure and identify any other insects like the common beetles and learn their names. Let the object be to learn to call the insects by name. When the cold weather prevents the further pursuit of the out-of-door studies, secure ants for a formicary. Make a special study of the habits of the ants.

If time permits compare the bee with the ant.

SEVENTH GRADE

WINTER TERM.

Mind and Body.

I. Review briefly the work of the previous grade, which had to do with the process by which the body is supplied with energy to do work and with material to repair waste and to produce new tissue. We come now to deal with these organs by which the body is put in touch with the universe outside of it, viz., the nervous system and the special sense organs.

Show the necessity for some such mechanism, by supposing its absence. Death would be speedy. Maintenance of life demands it. One of the properties of living matter is its sensitiveness to outside stimuli. In the human body are specialy modified parts to receive these impressions of the outer world. Such are: the eye, the ear, the touch organs in the fingers and other parts of the body, the special organs of taste in the tongue and of smell in the nostril.

By means of models, chart and diagrams teach the fundamental structure of these special sense organs. Pay particular attention to the eye and the care which should be bestowed upon it. So also in the case of the ear.

But in addition to these special sense organs is the need of another agency to interpret the impressions received and to cause all the parts of the body to respond accordingly. This leads to the study of the Central Nervous System.

By means of models, charts and drawings, teach the parts of the system, and, briefly, the nature of the function played by each. Set up problems imposed upon the body by the nature of the world in which we live and then lead the class to see how they are met by the action of the nervous element.

The Sympathetic Nervous System needs some recognition as that which serves more effectually to coordinate the involuntary activities of the internal organs.

Here we may emphasize the training which it is possible to give the nervous system. Habits are the results of such training often unconsciously given. The value of keen senses, steady and responsive nerves and strong, vigorous reactions should be emphasized. Physical excellence depends upon such.

In this same connection it is appropriate to build into the child's understanding the effect of alcohol and tobacco on the nervous system. This treatment should consist of a plain statement of facts, suggested by statistics and the experience of many men, and avoidance of utilizing the purely sentimental aspect of the problem.

Allow the pupils to make their own inferences from the facts presented.

SEVENTH GRADE.

SPRING TERM.

Identify as many of the spring birds as is possible. For this purpose arrange field trips, in order that pupils may learn at first hand. The use of pictures is permissable after some field work. Learning the birds from pictures results all too often in knowing them only by the pictures, and the real living bird is as much a stranger as before. Better learn a few and know them as living birds, than many and know only the pictures. The spring migration of warblers furnishes an interesting and stimulating field. In this work the spirit and enthusiasm count for much.

Make a special study of some group of birds such as the thrushes, (Turdidæ) or swallows, (Hirundindæ). Study their habits of nest building, rearing young, and economic importance.

What laws are in existence, either state or federal, for the protection of birds? Are they observed? Why not?

Review the trees learned in previous grade's work. By field trips learn to recognize them. Let this work lead to the study of the value of a tree. In what various ways do trees contribute to man's welfare? Proceed then to a study of the forests of our country as regards: distribution, kinds, just treatment, conservation. Abundant material is available in this study. Let the attempt be to put the pupils in touch and sympathy with the attempt to regulate and thus preserve for future generations, the forests of the land.

The conservation of coal and mineral resources may be dealt with also. The *national character* of the problem should be emphasized. The nation's welfare is first.

These two topics, properly organized, will furnish abundant and interesting material for the term. Do it well. If ever the children are to be given ideas of real worth along these lines it must be done in school. Encourage the pupils to read articles and books, and report to the school. Such reports may be used as opening exercises or as a basis for language work.

EIGHTH GRADE.

FALL TERM.

Study some of the common insect pests. In the garden find in corn the adults of the corn root worm. Find out about the damage done by the larvæ. Determine any means of control now known.

The Codling Moth. Find the larvæ in "wormy" apples. Learn to identify it by any specific characteristics it may have. Study its life history and method of control.

The House Fly. Study the life history and relation to disease. Methods of control.

The Mosquito. Life history (obtain whole series of breeding); relation to disease and methods of control.

These studies on the mosquito and house fly are such as emphasize the *national characteristics* of the problem of controlling insect pests.

EIGHTH GRADE.

WINTER TERM.

THE EFFICIENT NATION.

The studies of the previous grades have had to do with those processes by virtue of which the individual is kept in life. The pupils of this grade are growing into a consciousness of the interdependencies of our social organizations and many will soon take an active part in them
our social organizations and many will soon take an active part in them.
To the growing consciousness there must be affixed a knowledge, in embryo, at least, of the principles which underlie the health of the individual and the health of the community. This knowledge is essential in order that they may be sympathetic with the modern movements toward a higher social health. Should every person do as our present knowledge could direct him, he could rid himself of many terrible diseases and greatly improve the physical and mental average of the race. Ignorance in this case is truly a curse. The aim here should be to develop a knowledge of the principles of racial health, and a patriotic desire to assist in carrying to higher levels the efficiency of the nation.

Here can be outlined only the possible topics. The extent to which each will be treated must depend upon the time available. The following are suggested:

I. The likeness between the community (or the nation) and an individual in respect to
  a. Need for food.
  b. Need for getting rid of wastes.
  c. Need for protection, etc.
  d. Made up of parts.

And like an individual may have
  a. Diseases.
  b. Or weaknesses in some part.

II. The commonest cause of inefficiency is disease. Diseases are of different types.
  a. Congenital diseases, as epilepsy, feeble-mindedness, idiocy, etc. These are wholly *inherited.* Emphasize the evil which comes to society by the mating of parents so afflicted. Treat the subject frankly. Much good can be done.
  b. Organic diseases, like dyspepsia, heart disease, biliousness, etc., which are usually due to improper habits.
  c. Germ diseases.
    1. Relation between germs and disease should be taken up in two or three typical cases, as diphtheria, typhoid fever, tuberculosis.
    2. Use of antitoxin.
    3. Quarantine and isolation.

III. Diseases may be spread by
  a. Impure food (as milk).
  b. Impure water (as typhoid).

  Contact with infected people or through air from their lungs, etc.

  Emphasize the value of all measures tending to prevent disease by the above means.

IV. Value of good health. As an asset for usefulness, happiness and prevention of many diseases. The national health is the sum of that of the individuals in it. The national efficiency is the sum of that of the individuals in it.

SPRING TERM.

EIGHTH GRADE.

1. Make such plans for the garden as are *advisable.* Carry out such plans.

Make a study of the corn as a crop of great importance to the *state* and *nation.* The following topics are suggested:

I. Uses made of corn.
II. Great corn producing areas.
III. Method of producing corn.
  1. Testing the seed.

Determine by experiment the condition seeds require to germinate. Work out different methods of testing for germinating power. Value of simple tests.

2. Preparation of the soil.
   Demonstrate the value of cultivation in conserving moisture in the soil. Show application to corn growing.
3. Planting by checking.
4. Cultivating. Purpose.
5. Selection of seed—Study characteristics of good ears; the ideal ear.
6. Harvesting.

IV. Plant corn in garden and apply principles developed.

V. Study methods of producing fruit trees. Take the history of an apple tree.

1. Planting the seed to obtain stock.
2. Bud grafting.
3. Whip grafting.
4. Cleft and scion grafting. Apply the principle.

VI. Identify as many as possible of the native trees. Make the motive the desire to give names to trees. Learn them by their shape, bark, leaf, flower, or finish. Collect leaves and fruits and mount on cardboard for review.

Suggested topics in Physical Science. These may be taken up at any time, preferably, however, at such seasons as make out-of-door work difficult.

THE HEATING OF HOUSES.

SIXTH GRADE.

Fire. Its History.
    Nature of combustion. Factors necessary, etc. (Heat, air, fuel.)
Fuels—their chief characteristics.
Indoor fires—stoves, fireplaces, furnaces, etc. Types.
    Firepots, flues, drafts, dampers, etc.
How heat travels from place to place.
    Conduction—actual contact.
    Expansive effects of heat.
    Effects of heat on densities of fluids and flotation.
    Convection in air and water.
    Radiation.
Stoves.
Hot air furnaces.
Hot water furnaces.
Steam heat.
Heat for cooking purposes.
    Coal and wood cook stoves and ranges.
    Liquid fuels and burners.
    Gasoline, kerosene, alcohol, etc. (Dangers.)
    Petroleum and its products.

Distillation.
Gas.
Electricity.
Fireless cookers.

Use of convection currents to heat water for bath room, etc.

All work to be objective and experimental.

THE LIGHTING OF HOUSES.

SIXTH GRADE.

Historical.
  Pine knot. Greek and Roman Lamps. Eskimo lamps.
  Candles. (Dipping and molding.)
The combustion of the candle. (Review combustion from previous topic.)
  Melting and vaporizing of the grease. The wick. Surrounding currents.
The kerosene lamp.
  Compare with the candle.
Gasoline lamps.
  Compare open-flame lamps with those using mantles.
Gas lamps. (Review study of gas and its manufacture.)
  Acetylene.
Electric lamps.
  Incandescent. Arc.

THE WEATHER.

SEVENTH GRADE.

What is meant by "the weather"?
  Temperature, humidity, pressure, movements of the air.
Long continued observations to determine:
  Successions of winds.
  Relation of wind direction to precipitations.
  Relation of wind direction to temperature.
  Relation of temperature to clouds and precipitation. Etc., etc.
Review of convection of currents studied in sixth grade.
Experimental studies in air pressure.
  Demonstrations of the existence of air.
  Proof that air has weight.
  Proof that air exerts pressure.
  Effect of air pressure upon air movements.
  Winds.
  Measurement of air pressure.
  Barometer.
Lows. Their movements, etc.
Weather maps.
  Their features and interpretations.
Weather predictions.

PUMPS.

SEVENTH GRADE.

The experimental study of air pressure and its effects, in the preceding topic, may very profitably be followed by a study of pumps.

Height to which air pressure can lift a mercury column.
Relative weights of mercury and water.
Height to which a water column can be lifted by air pressure.
The mechanism essential to a working pump.
Actions of the valves.
Construction of a common "suction pump" by some pupils.
The need of water by the plant.
How the need is met in times of drought.
Water from the soil must be used.

SOIL MOISTURE.

EIGHTH GRADE.

Is brought to the plant's roots by "soaking" (Capillary attraction).
Experiments to determine conditions for most rapid capillary action.
Experiments to illustrate direction of capillary action.
  Upward, downward, sidewise.
  From region of greater moisture to one of less.
Experiments to determine soil conditions best adapted to conserve moisture.
  Demonstration of the efficiency of the soil mulch.
Discussion of the results of the experimentation.
  Formulation of rules for moisture conservation.
  Application of these rules to "dry" farming.

REFRIGERATOR AND COLD STORAGE.

EIGHTH GRADE.

Heat effects involved in fusion and evaporation.
The common ice-using refrigerator.
  Its construction—different types.
  Its care.
Use of ammonia for refrigeration.
  Manufacture of ice.
  Cold storage.
Freezing mixtures.
  Making of ice cream, ices, etc.
Refrigeration in transportation.
The economic importance of cold storage.

MUSIC.

All life development, or progress, consists in this: Becoming conscious of the deeper life within us. Of that deeper inner life, the true song, truly sung, is a true exponent.

The teacher of the "spirit," the child in his spirit, the song in its spirit—how can the school-room music fail of its spiritual end as an educational factor—as beautiful as it is positive?

"Music education demands first of all the very best of the art as a basis. There can be no compromise on this standard; but it calls for much more. The demand extends to and includes the presentation of that best in such a way that the child will learn to appreciate and to love it with an ever increasing interest and understanding."

When discussing the teaching of music, one often hears it said that the children may be so taught that they will become interested in the study of mere technical excercises, that they will learn to enjoy their sight-reading studies, and it is a well-known fact that the efforts of children can be so directed and their work so stimulated that they have a kind of enjoyment in the performance of any task, independently of the real interest or advantage that it holds for them. This habit of distorting the natural interest of the child by accustoming him to be satisfied with, or at least resigned to, things that are in reality distasteful to him lies at the very source of much poor teaching; and this is especially true in regard to the teaching of music in the schools.

Let us repeat:—An education demands the very best materials for children; but it demands, also, as equally important, that this best be presented in a way that conforms to the natural ability and ever growing powers of the child.

The first phase of music study in the early grades is imitative song-singing coupled with creative or original song-singing, which is coming to be so important a part of the child's music development. The second phase is the development of the knowledge of musical elements—intervals, length of tones, kinds of rhythm, etc.,—all of which can be worked out very definitely with the song as a basis. The second phase includes of course the application of knowledge gained, the reading of unfamiliar songs, and the mastery of new things in music so far as the children have time and power.

It will be helpful if the teacher will keep constantly in mind the thought that the music work of the school-room divides itself into two separate, distinct phases—song-singing as a musical experience and song singing as a result of study, with the added thought that each phase must be properly related to the other; otherwise, the singing hour is sure to degenerate into an exercise of mere song-singing without plan, method or educational principle, or, on the other hand, into the extreme or perfunctory sight-reading grind.

As an issue of this attitude toward school-room music the teacher derives the following fundamental working principles:

1. Musical experience should be the beginning of musical knowledge.
2. The child's first study should be based upon the songs within his imagination.
3. The best songs are the best suggestive basis for the child's training.

4. Grading songs depends upon the developing child in his musically-responsive nature.

Upon these four principles we rest the following outline method-course, covering the music work from the primary to the eighth grade inclusive.

MUSIC IN PRIMARY GRADES.

FIRST GRADE.

The music work of the first grade is comparatively simple, yet it requires more tact and careful handling than any other grade in the school.

Here it is that the inspiration for singing is given which is to last through all the grades. Here it is that the child learns to appreciate the beautiful in music, and it is here that music is going to leave its lasting impression and influence.

The problem upon the part of the teacher is fourfold, viz.—the teaching of the Rote Song, the development of Rhythm, treatment of monotones and the conservation of the child voice.

The song period must be a happy time, therefore the songs must be very carefully chosen. The child must respond to the story of the song and what it means, and all music which does not appeal to the child life and imagination has no place in this grade. The teacher must know her song thoroughly, and teach it correctly—phrase by phrase— from her own voice. The children should learn to appreciate the pitch and tone as they listen to the teacher. Rhythm should be interpreted as the teacher presents the song to the pupils. She must be most careful in dealing with the monotone in this grade.

By the end of the year the children should have a repertoire of at least thirty-five or forty songs which can be easily recalled to memory, and an appreciation for music coupled with a desire for further study.

SECOND AND THIRD GRADES.

In the second grade the child should begin to appreciate the fact that there is something more to music than the mere learning of songs by imitation, and from his first year's experience the desire for learning how to find music out for himself should be strong within him.

I. Songs:
    1. Rote and Art Songs more elaborate than in Grade I.
    2. Observation Songs in Grade II.
    3. Rounds and studies preparatory to two-part singing in Grade III.

II. Exercises:
    1. Vocal exercises carefully used for tone flexibility and maintaining head voice.
    2. Breathing exercises used to stimulate diaphragm breathing.

III. Rhythm:
    1. The undivided beat developed in Grade II.

2. The equally divided beat developed in Grade III.
3. Systematic tapping of the rhythm of the songs encouraged.

IV. Notation:

1. Syllables developed from the observation songs the last half of the second year.
2. Music notation taught during the third year. Sight-reading encouraged both through chorus and individual recitation work.

The work in all of these grades is done with the one idea of making the song singing better, and the music hour a greater pleasure to the pupils.

INTERMEDIATE AND GRAMMAR GRADES.

Beginning with the fourth grade, the technical study of music really begins; all through these grades the song must be kept uppermost in the teacher's mind, and all work must be handled from the song point of view. However, problems are constantly arising out of the song which must be solved, and it is only through a thorough and systematic study of the technical side, that a mastery of these problems is acquired.

All rhythm problems are studied, keys and key relationships, scales and scale buildings, chromatics, major and minor modes, bass clef, etc. These are presented in connection with the songs which are now used in one, two and three parts.

mar school life shall have as good a foundation in music study as in any
mar school life hsall have as good a foundation in music study as in any other branch of his school work, and a desire and an appreciation so firmly established, that through the next few years of school life and when school days are over, he may seek further culture, and need only to build upon the foundation already firmly laid.

DRAWING.

Since "drawing is a universal language" it is essential that every child shall be thoroughly equipped with the means of this mode of expression. By the time he graduates from the high school he should be able to express his ideas as freely, though perhaps not as well, with his pencil, brush, or whatever medium he desires, as with the spoken language. In order that this may be true the child's vocabulary must be added to year by year as he progresses in his other school work.

The following is a suggested development of the four lines of work. Through the grades special attention is paid to the choice, size, and shape of paper for the sketches to be made, the placing upon the paper, the arrangement of flowers in the room, the bulletin board, and the mounting of sketches and pictures.

1. Constructive Design.

All constructive design is related to the manual arts.

Grade I.—Draw plans of work already made in the construction period.

Grade II.—Draw plans without measurements. These are to be used in the construction.

Grade III.—Plans made free and with rules full size.

Grade IV.—Plans made to the scale ½ inch equals 1 inch when necessary. Study of curves in connection with designs for baskets and pottery.

Grade V.—Scale ¼ inch equals 1 inch. A more careful study of beautiful curves.

Grade VI.—The use of kit, T square, triangles, and compass. Working drawings with terms front, top, and end views. Any scale used.

Grades VII. and VIII.—As the constructions become more complicated the working drawings must also. These may be inked in the eighth grade. Especial attention should be paid to beauty in proportions and lines.

2. Decorative Design.

The decorative design throughout the grades is related to the work in manual training.

Grade I.—Simple stencil borders made by paper cutting. Stick laying.

Grade II.—Stencil borders having definitely planned corners made by paper cutting. Stencil surfaces also made by paper cutting and folding.

Grade III.—Paper folded and cut on the outside, making units. These are traced and water color used.

Grade IV.—Use of squared paper in getting border and surface arrangement. Units made from plant forms.

Grade V.—Arrangement of plant forms within definite shapes.

Grade VI.—Rosettes from plant forms. Study of the structural lines of the object to be decorated.

Grades VII. and VIII.—The motif and method suited to the problem.

3. Representation.

A. LANDSCAPE.
B. NATURE DRAWING.
C. OBJECT DRAWING.
D. POSE DRAWING.

Grade I.—A. Land and sky. B. Line of Growth. C. Much free, spontaneous, illustrative work in connection with out-of-door sports and literature. Aim to have the sketches recognizable. D. General direction and action.

Grade II.—A. Clouds in the sky and distant hills. B. Angle of the branching. C. In illustrative work pay especial attention to general proportions. D. Angles and parts. Action of whole.

Grade III.—A. Paths. B, C, and D. Relative sizes of parts with their positions.

Grade IV.—A. Bodies of water. B, C, D. Characteristic views to be chosen. Distinctive shape and proportions.

Grade V.—A. Trees in foreground. B. Study of trees. C. Elements of a picture—object, foreground, background. Spherical and hemispherical objects. Grouping. D. Relation of parts to whole. Action in parts.

Grade VI.—A. Sunset. Translation of black and white reproductions into color. B. Study of details, as single leaves in various positions, modes of plants, etc. C. Effect of foreshortening in hemispherical, cylindrical and conical objects. Grouping. D. Study of details, as heads, hands, feet.

Grade VII.—A. Details may be added, such as birds flying through the air. B. Plant composition. C. Effect of foreshortening upon rectangular objects. D. Foreshortening of parts when body is in different positions.

Grade VIII.—A. Houses. B. Plant composition with decorative coloring. C. The use of invisible edges. Axes and diagonals. Out-of-door sketching. D. Face in different positions.

PHYSICAL TRAINING.

For the Pupils in the Training School.

Aim—

1. To develop and maintain good health and counteract many of the ills of school-room environment.

2. To stimulate a desire to acquire greater strength, properly distributed, and to correct any personal defects which may have arisen from neglect or misuse of physical powers.

3. To develop self-control, self-reliance, attention, concentration of thought and dexterity, laying basis for successful manual, as well as mental and moral training.

4. To develop rhythm and co-ordination that will produce a natural and unconscious grace of movement.

5. To develop a symmetrical body under the perfect control of the will.

6. To make the subject of physical training in the school-room attractive to the pupil, furnishing him with recreation and rest through change of activity and the sense of exhiliration afforded by the exercise.

Method:—

A lesson daily, graded according to the physical and mental powers of the pupils.

These lessons consist of exercises from the Swedish system of gymnastics, games, motion songs, marching, military tactics, fancy steps, Indian clubs, wands, bean-bags, dumb bells, hoops and such combination of movements as are adapted to the age and surroundings of the child.

COURSE IN MANUAL ARTS.

This course proposes to take a few important industries that lend themselves readily to elementary work, and to make a somewhat intensive, sustained study of them, adapting their steps of progress to the progress of the children's work.

The plans for the first and second grades are the outgrowth of a conviction that while a large amount of paper cutting and folding, stick laying and work at the sand table are valuable from the standpoint of enriching the child's experience and of adding interest, they cannot be justified from the standpoint of construction.

Activities more definitely purposed and preparatory to those which are to follow are suggested for the time given to construction.

Hence the course simply removes this work from the construction period and uses it as seat work and in connection with the other subjects.

FIRST GRADE.

I. Building.
   a. Materials—Blocks of various sizes.
   b. Houses, railroads, bridges, forts, walks.
   c. In case of the house problem, the children experiment with the blocks, building foundations and floors.
   d. Drawings from these are made by the children in the art work.
   e. Buildings of walls and putting on roofs.
   f. From finished houses, children make drawings of front and side.
   g. One large building, which is to be more permanent, is built by groups in succession. While this house is in progress each child works out an individual house problem.

II. Bookbinding.
   a. Portfolio.
      Made of two pieces of heavy paper, one being one-half inch wider and one inch longer than the other. The smaller is placed on top of the larger with long edges even on one side; the projecting edges are turned and pasted.

A portfolio is made each term but with such modifications as to make it a new problem each time.

   b. The Homebook.
      Made from manila sheets 9 inches by 12 inches with colored covers. Two holes punctured on short side. Tied with single cord.
   c. Nature or Sketch Book.
      A simple folio with colored paper cover, three punctures, tied with single cord.
   d. Fairy Book.
   e. Large Language Book.
   f. Scrapbook.

III. Clay Modeling.
   a. Marbles, beads, for number work.
   b. Vegetables for grocery store, for number work.
   c. Fruits and candies for confectionery store, for number work.
   d. Dishes for china store, for number work.
   e. Illustration of stores involving animal and human forms.

IV. Textiles.
  a. Looping with Macrame cord—reins, curtain holders.
  b. Rugs for doll houses.
    Woven of outing flannel on wooden frames. Simple stripe designs. Sizes, proportions, and color planned by children in their art work.
  c. Holders.
    Cross stitching on large checked ginghams or on burlap of designs planned by children.

SECOND GRADE.

I. Building.
  a. Planning a one-story house.
  b. Foundation plans are made on paper by children, and then are transferred to the blackboard. Class chooses best and modifies it is, after discussion, it appears necessary. In the case of the house problem, attention is given to ventilation and proper placing of doors and windows.
  c. Plans for front and side are prepared as in b. The plans are worked out after the drawing period under the direction of the art instructor.
  d. Building with bricks made by the children. See modeling.

II. Bookbinding.
  a. Making of cardboard foot and yard rulers, one-inch, two-inch and three-inch squares, and rectangles of various sizes, for use in number work.
  b. Portfolio.
    Made with flap from one piece of tough paper, by marking sixteen rectangles and cutting out corner ones.
    A new portfolio is made each term, but is so modified as to make a new problem each term.
  c. Spelling Book.
    Single leaves, covered with separate light boards, which are bound in cover paper with only turn-overs pasted, and lined with allover pattern prepared by the children. Tied with cord by Japanese method. Sizes, proportions and color combinations planned out in art work.
  d. Language Book.
    Single leaves covered with one piece of crash or burlap, finishing edges and working design with coarse thread. Colored end paper. Tied with heavy cord.
  e. Scrapbook.
    Made of simple folios, covered with folio of heavy bristol board, reinforced at back with strip of book cloth, and sewed with five punctures with double cord. Sizes, proportions and color schemes planned in art work.
  f. Number Note Book.
  g. Robinson Crusoe Book.

h. Hiawatha Book.

III. Clay Modeling.

a. Making of bricks for house. Red clay is molded into forms made by other children.

b. Dishes, vegetables, and bakery goods are made for sales in connection with the arithmetic work.

c. Lamps, dishes, and cooking utensils of Robinson Crusoe are made in connection with this story, and attempts made to fire them.

IV. Textiles.

a. Weaving marble bags of one piece, with one color of warp and another of weft. Looms made by children.

b. Weaving school bag of coarse soft cord. Cotton roving. Stripe design. Plan of same size and color as bag made by the children in the art class and followed in weaving.

In connection with the second grade study of Hiawatha the children make wigwams, cradles, moccasins, and canoes. In connection with the Robinson Crusoe Story, they make tables, chairs, flails, sieves, boats, ladder and charcoal.

THIRD GRADE.

The good of the active, rapidly growing children in the Third Grade demands more vigorous activities and more difficult tasks.

Furthermore, the children really want just such tasks as are here suggested, and the joy they get out of the effort and the satisfaction and increased power they feel at its completion, justify the undertaking.

I. Building.

The following are made from plans prepared by the children in the art work:

a. Sled.

b. Cart box.

c. Bird house.

d. Forms for second grade brick making.

e. Loom for sofa pillow cover.

The ruler, try-square, hammer and brace and bit are used in these problems.

II. Bookbinding.

a. Spelling Book.

Single leaves with separate boards. Boards are covered in half or full book cloth. Top board is cut into two parts, leaving a three-fourths inch piece at back, thus making a flexible joint. Tied through two punctures with heavy cord. Paste down end cover used for decoration in art work.

b. Literature illustration book cover.

Half cloth. Short boards, leaving wide, limp back of book cloth. Three punctures cut through and tied with heavy cord. Proportions and color scheme planned in connection with art work.

- c. Portfolio.
  Made with flap, from one piece of oak-tag. Marked into sixteen rectangles, the corner one being cut out. The corners of flap and ends may be modified to suit the individual taste and made to resemble an envelope.
- d. Nature Notebook.
  Single folios of paper sewed with five punctures. Covered with half cloth, the cover being made separately and laid on, using the first and last leaves as paste-downs. Marbled boards. Covers and end papers used as problems in decoration.
- e. Number Note Book.
- f. Scrapbook.

III. Clay Modeling.

- a. Small flower pots.
  These are to be fired and used in school in connection with plants and bulbs.
- b. Vases for dried grasses.
  The above are made from designs planned by children.
- c. Modeling in relief. Children posing.
- d. Casts of children's work.

IV. Textiles.

- a. Begin coil of raffia over raffia for mats and small baskets.
  Shapes and simple designs planned in the art work.
- b. Sofa pillow top.
  Woven of cotton roving on looms made by children. Designs prepared in art work.

In connection with the reading of The Cave Men, skin cradles, covers for water bottles, splints for baskets, splint mats in various designs, and pads to protect the forehead, are made by the children.

The Horn Book is made in connection with the story of the early schools of this country.

FOURTH GRADE.

I. Bookbinding.

- a. Portfolio.
  Made of heavy cover paper, with end pieces of book cloth folded so as to allow for increasing or decreasing of thickness of folio. Modified to suit individual.
  A portfolio is made each term with such modifications as to make it a new problem.
- b. Nature Book. One section.
  Full sheets folded and cut to proper size. Sewed with five punctures. Bound in half cloth. Boards laid on before binding. First and last leaves of section used as paste-downs. Cover design worked out in art class.
- c. Geography and History Notebook.
  More than one section. Paper folded and cut as in b. Bound

in full paper—boards bound separately and laid on. Introduction of colored end papers. Sewed in cheap commercial style—through all sections with seven punctures. Covers and end papers used as problems in design.
  - d. Arithmetic Notebook.
  - e. Literature Notebook.
  - f. Re-cover. Some school book or book of the child. New super put on. New end papers tipped in. Cover bound separately in half or full cloth.

II. Textiles. In the following, the size, shapes, and designs are planned in the art work:
  - a. Solid raffia basket with varied stitches and more complicated design.
  - b. Raffia and reed basket. Combination of stitches and more difficult shape and design.
  - c. Weaving piece of cloth of finer texture and more complicated design.

III. Pottery. Coil building.
  - a. Relief modeling of vegetable and animal forms.
  - b. Tea-tile—incised decorations.
  - c. Paper weight—relief decorations.
  - d. Small undecorated bowl.
  - e. Larger bowl with border design.

All of the above are preceded by constructive and decorative designs worked out in the art department.

IV. Building. Bird House.

FIFTH GRADE.

I. Bookbinding.
  - a. Portfolio. Same as in Fourth Grade. Modifications by pupils.
  - b. Desk blotter pad—leather corners.
  - c. Rebind book from Library.
    1. Cutting off old covers.
    2. Cutting apart the sections.
    3. Mending and guarding torn folios.
    4. Sewing with five or seven punctures, kettlestitches.
    5. Half cloth, single boards. Case binding.
    6. Gluing back and putting on over cover.

All constructive and decorative design in above are worked out in the art department.

II. Textiles.
  - a. Basketry. Baskets of raffia and reed—more difficult shape and stitches and more complicated designs.
  - b. Weaving. Larger pieces of cloth of finer threads and more difficult in design.

III. Pottery.
  - a. Candle-stick.

b. Small fernery with border design.
c. Inkstand.

The story of the Potter, and the early history and methods are made subjects of study, and the Potter's wheel is brought into use to give the commercial aspect of the work. In all the problems in pottery, the shapes and designs are worked out in connection with the art work.

SIXTH GRADE.

I. Woodwork. It is assumed that the course in Woodwork that requires a maximum of independent thought on the part of the pupil and a minimum of dictation from the teacher is the best. Hence, the plan here suggested is that the teacher, keeping in mind the interests of the pupil, suggest in general terms (specifying particular features or constructions desired) the problem for some specific purpose. On the basis of this suggestion, the pupils make freehand sketches in the drawing classes, showing their individual ideas of such a project and indicating roughly the scheme of decoration. Then in conference with the Drawing and Manual Training teachers they eliminate such impractical and undesirable features as may be found in their sketches. From these sketches, simple working drawings are made for use in the shop, and methods of construction, suitableness of material, decoration, and finish are discussed.

All this precedes and prepares the way for the actual work with materials, so that the pupil goes about his construction with a workmanlike spirit and intelligence.

The following are types suggested for the Sixth Grade. They require simple squaring by use of the plane, try-square, gauge, and knife, and the simple assembling of parts by the use of hammer and nails.

a. Key rack.
b. Tea-pot stand. Simple cross for support.
c. Bird house.
d. Sled.

II. Bookbinding.

All constructive and decorative design in the following problems are worked out in the art department.

a. Portfolio.
b. Bind from original sheets some small book like "He Knew Lincoln," "A Perfect Tribute," "A Man Without a Country," etc. Sew with five or seven punctures. Kettlestitches. Glued back. Case binding as in B Grade Six. Half or full cloth.
c. Decorative binding.
Rebind one of pupil's books. Sew on tapes, ribbons, or strips of leather with fancy thread in decorative stitches. Tapes laced through boards and tied at foredge. End papers pasted down to cover tapes inside covers. Tapes and stitches left exposed at back.

Pottery.

- a. Vase with relief or inlaid decorations.
- b. Cracker jar with cover.
- c. Firing.
- d. Preparation and application of glazes in a and b.
- e. Glaze firing.
- f. Making and use of simple molds.

SEVENTH GRADE.

I. Woodwork. See introductory in 1, Grade Six. Discussion of tools and their uses, and of various common woods and the methods in their preparation for the market, etc. By proper arrangement, this work can be largely covered in connection with Nature Study or Industrial and Commercial Geography.

- a. Box—simple butt joints, and top board for lid.
- b. Inkstand and stationary holder.

The following types are suggested for Seventh Grade:

- c. Book rack.
- d. Woven cane top stool—dowel rods for cross pieces.
- e. Individual projects of pupil's suggestions.

II. Bookbinding.

- a. Portfolio.
- b. Limp leather binding. Bind or rebind pupil's book in one piece of velvet or ooze sheep. Sewed on tapes or with kettle-stitches. Cover used as problem in design in connection with art work.
- c. Decorative binding. Blank book, or magazines. Sewed on colored tapes or leather. Tapes laced into covers. Back uncovered.

EIGHTH GRADE.

I. Woodwork. See introductory in 1, Grade Six. Discussion of tools, woods, lumbering and allied industries continued. Finish and the preparation and the use of stains are also discussed. The following are types suggested for the Eighth Grade:

- a. Taboret—mortise and tenon construction.
- b. Pedestal for student lamp.
- c. Drawing board.
- d. T square.
- e. Picture frame.
- f. Waste paper stand.
- g. Small table.

General. Individual and group problems are encouraged. Problems arising from the needs of the school are used to much advantage. Frames, screens, stands, tables, shelves, etc.

II. Bookbinding. Constructive and decorative design are made in the art book:

a. Portfolio. Three-part cover in three-fourths leather.
b. Bind or rebind book in three-fourths leather. Sewed on tapes. Double boards. French joint. Backed and rounded. Head cut and colored. Colored head band. Boards glued on before leather back and cover papers are put on. Typical library binding.
c. Book for mounting drawings and pictures.
Made after style of scrapbooks. Sewed all along or on tapes. Heavy or double boards. Bound in half or three-fourths morocco.

WRITING.

Skill rests on motor habit, is developed by sustained effort, and without repetition—practice—rapidly decreases. Written from itself does not afford sufficient motive to secure the desired result. This must be found in keeping writing from the first to the definite end for which it is intended—self-expression. Carelessness and slovenliness have the same tendency to form habits as carefulness and neatness. Hence the former cannot be tolerated.

In the primary grades, pupils have not the degree of motor co-ordination necessary to perfection of form. Hence forms must be approximate only, and the process of approximation must be given time and a moderate degree accepted. However, approximation to standard forms should progress through these grades.

The movement in writing should be at first large and free, on the black-board, on large sheets of paper unruled—for example, the 9-in. by 12-in. drawing paper—or very wide-ruled paper, with no extra ruling.

The first work in writing is closely associated with learning to read, deals with the words the teacher presents, and is based on the impulse and power to imitate. The teacher writes a word of immediate interest, because of its association, on the board—writing deliberately in a large hand and in such position that the children may see the whole movement—i. e., with the left side to the class—erases and asks the children to write. The process is repeated at the teacher's discretion. No copying is to be done, except as the children imitate the teacher's movement. Children may be trained to imitate in the air the teacher's motions as she writes, preparatory to their own effort. The work on words merges as soon as possible into sentences.

To help children gain co-ordination and freedom the teacher gives a simple story which the children illustrate at the board, step by step, using large bold lines.

Careful and constant attention must be given to train to a posture and movement that are hygienic and economical of physical energy—that is, a position that does not distort the body, hinder free motion, or strain the eyes. As a rule this matter is grossly neglected by teachers to the defeat of the course of training designed and provided. The teachers are instructed to hold children to adopt and adhere to the following:

Position:—Child facing the desk squarely; trunk straight, inclined slightly forward and resting lightly on left elbow so as to leave the right arm entirely free, feet firmly and evenly on the floor. Paper perpendicular to the body or front edge of the desk—or better, perhaps, paper turned to be at such an angle to the body as will prevent twisting the trunk or dropping the head to watch the pen. The pen should be held by the thumb and the first two fingers—the first finger on top of the holder, the second finger and thumb to the side of it and underneath, the fingers straight, the thumb bent to touch the holder opposite the first joint of the first finger. This manner of holding the pen will naturally cause the holder to fall across the knuckle of the forefinger.

The question of slant in writing will take care of itself, resulting in that degree of slant most conducive in individuals to the standard described at the outset—if only right physical habits are formed.

HISTORY.

BASAL TEXT—GORDY.

The History Course begins with the fourth grade and continues steadily through the fifth, sixth, seventh and eighth grades.

In the fourth and fifth grades biographical stories of discovery, exploration and of pioneer life make up the main line of study.

The sixth grade is given to the full treatment of a few important topics of the Colonial period. The seventh grade deals with causes of the Revolution and closes with the Adoption of the Constitution.

The eighth grade treats the main topics of the Constitutional period.

The history stories used in the fourth and fifth grades require a complete geographical setting. Continental and world maps are needed almost constantly. Blackboard sketches and outline maps are in constant use. A very large amount of place geography, as well as the physical and climatic conditions, should be clearly and definitely taught in these stories. Every story should be clearly outlined under a few main headlines and this outline should be made the basis of oral and written reproductions.

U. S. HISTORY.

FOURTH GRADE.

1. Shabbona, the Indian chief of Northern Illinois.
2. Henry Hudson's voyage on the Hudson River.
3. Marquette and Joliet on the Lakes and along the Mississippi River.
4. The story of Hennepin on the Upper Mississippi River and in Minnesota.
5. The early life of Lincoln in Kentucky, Indiana and Illinois.
6. Boone, the pioneer hunter and settler in Kentucky.

7. Robertson and Sevier in Tennessee.
8. George Rogers Clark, and the conquest of the Illinois country in the Revolution.
9. DeSoto and the early exploration of the Gulf States.
10. Freemont's first trip to the Rocky Mountains.
11. Freemont's second trip, to Salt Lake and California.

FIFTH GRADE.

1. Champlain's explorations and adventures in Canada and New York.
2. La Salle's trips on the Lakes and down the Mississippi.
3. John Smith's exploration of the New England coast.
4. The early life of Washington up to Braddock's defeat.
5. Ponce de Leon and his voyage to Florida.
6. Sir Walter Raleigh's attempted settlements in the Carolinas.
7. Powell's trip down the Grand Canon.
8. Journey of the Gold Seekers to California in '49.
9. Drake's Voyage Round the World.
10. Columbus's great Voyage.
11. Cortez's conquest of Mexico.
12. Magellan's voyage across the Pacific.

SIXTH GRADE.

Review and sum up the work of Spanish, French and English explorers up to the time of the first settlement at Jamestown.

The struggle of the European states for the possession of new lands and their claims, based on discovery and exploration, should be made clear.

The grounds for these controversies lie back in the political and religious history of Europe since the beginning of the Reformation, and should be explained briefly and as clearly as possible by the teacher.

VIRGINIA.

1. Review the life of John Smith and his connection with the Virginia settlement.
2. The Virginia Plantation and the Land system.
   Description of a slave plantation.
   Virginia as a type of the southern colonies. Comparisons.
3. Berkeley and Nathaniel Bacon.
   Aristocracy and democracy in Virginia.

MASSACHUSETTS.

1. The Separatists and Puritans in England.
2. Early settlements at Plymouth and Boston.
3. The settlement of Massachusetts by Congregations.
   The town meeting. Full description of a town and its organization. Village and land system.

The General Court of Massachusetts.
The development of the representative system and of democracy.
Spread of the settlements.
Settlement of New Haven and other New England colonies and their resemblance to Massachusetts.
Self government through the colonial legislature. Conflicts with royal governors.
Governor Andros and the struggle for control.
Massachusetts compared with other Puritan settlements.

4. Indian wars and their results.
5. Religious disputes and conflicts in Massachusetts.

NEW YORK.

1. First settlement by the Dutch at Manhattan. Their land system. Dutch customs. Conquest by the English.
   Penn's purchase of Pennsylvania and plan of settlement.
2. The Iroquois Indians. Tribal organization. Their conquests. Their conflicts with the French. Their friendly relations to the Dutch and English. Comparison of the Iroquois with the other Indian tribes.

PENNSYLVANIA.

1. Life of William Penn and his struggle for freedom of conscience in England. Persecutions of the Quakers.
   Penn's purchase of Pennsylvania and plan of settlement.
   Founding of Philadelphia. Friendship with Indians.
   Penn's liberality toward the Swedes and Germans.
   The mixture of races and languages in Pennsylvania.
   Large immigrations of Germans and Scotch-Irish to Pennsylvania.
2. Early life of Franklin in Boston and Philadelphia. His growing influence in Pennsylvania and in all the colonies before the Revolution. His long residence in England as representative of the colonies.
3. The colonial wars leading to the last great struggle between France and England. William Pitt.
   Montcalm and Wolfe. Results of the fall of Quebec.
4. Number and distribution of Europeans, of Negroes and Indians in America in 1760.

Contrasts among the European races as to religion, language, social customs and character. Many of these topics have their beginnings in England and in other countries in Europe. It is important to understand the leading political, religious and commercial movements upon which the settlements in America were based.

The Puritan Revolution in England and the later attitude of the kings toward the colonies should be clearly understood.

SEVENTH GRADE.

1. Causes leading up to the Revolution beginning in 1760. The life of Samuel Adams furnishes the center of organization for the struggle between England and Massachusetts. The action and reaction between Parliament and the colonies show clearly the development of the struggle. Both sides of the conflict need to be clearly appreciated.
2. Lexington and Bunker Hill. The evacuation of Boston.
3. The Second Continental Congress.
   The Declaration of Independence.
4. Washington's retreat from New York and through New Jersey.
5. Burgoyne's Campaign. A full treatment of this topic as a typical military campaign.
   Show its important effects in America and Europe.
6. Franklin's life in France during the Revolution. His success in securing the French alliance.
7. Washington at Valley Forge. The Conway cabal.
8. Robert Morris and the financial difficulties of the Revolution.
9. John Paul Jones—His and others' naval exploits.
10. George Rogers Clark and the war beyond the Alleghanies.
11. Campaigns in the South. The fall of Charleston. Cornwallis's march northward. King's nomination. Greene's campaign.
12. Cornwallis's march northward and surrender at Yorktown.
13. The treaty of Paris, 1783.
14. The weakness of the government under the articles of Confederation.
15. The Constitutional Convention of 1787. Leading new conflicts and compromises.
16. The Ratification of the Constitution.

EIGHTH GRADE.

1. Growth and Expansion during the Revolution. The overthrow of the Iroquois. Sullivan's expedition. Settlement of Tennessee and Kentucky. Defeat of Indians. The conquests of George Rogers Clark, and effect upon the terms of the treaty in 1783.

2. Washington putting the government on its feet. Measures for establishing the federal authority. Hamilton organizes the financial system. Assumption of state debts. The first tariff. The United States Bank. Washington's Declaration of Neutrality. Defeat of the Northwestern Indians. Jay's treaty. The whiskey insurrection. Farewell address. Adams and the federal authority. Naturalization, Alien and Sedition laws.

3. Westward expansion by Indian wars and treaties. Defeat of Sinclair in Ohio.

A full treatment of Anthony Wayne's campaign against the Indians. A typical Indian war. Compare with Jackson's expedition against the Creeks and Choctaws, and with Harrison at Tippecanoe. Indian tribes driven west of the Mississippi.

4. Jefferson and Democracy. Close construction of the constitution. The purchase of Louisiana from France. Napoleon's plans. The Lewis and Clark expedition. Comparisons with later territorial additions—Texas, California, Alaska, etc.

5. Madison and the second war with England. War for commercial independence. Results.

6. Monroe and the era of good feeling. Unity of sentiment in support of the government. The Monroe Doctrine. America not a field for colonization by European nations.

7. Jackson, the leader of democracy. Life of Jackson. Nullification. The Webster-Hayne debate. The life of Daniel Webster.

8. The Tariff and the growth of manufactures. The tariff in 1816. Samuel Slater. The tariff in 1828. Tariff legislation till 1860. Government income and expenditure.

9. Improvement of roads and commerce with the West. The Old National Road. The Erie Canal. The Illinois and Michigan Canal. Building of the Pennsylvania Railroad. New York Central. Other railroads crossing the Alleghanies.

10. A series of important inventions. The steamboat on the Hudson, Ohio, and Mississippi. Improvement in locomotive engines. The cotton gin. Spinning jenny and power loom. The electric telegraph. Farm machinery, plows, reapers, threshing machines. The sewing machine.

11. The rapid expansion of the North. Railroads and canals. River and lake commerce. Manufacturing in the East. Immigration and its distribution. The gold discoveries in the West. The public land system. Settlers. Education and the free school system. Colleges.

12. The growth of slavery. Slavery in Colonial times. Slavery and the Constitution. The Missouri Compromise. The Texas Question. The Mexican War and increase of territory. The Kansas-Nebraska bill. The Lincoln and Douglas debate. The growth of the Anti-slavery sentiment. The abolitionists. Garrison and Lovejoy. The underground railroad. Slavery in Illinois.

13. The Civil War. Its cause. Lincoln's purpose. Grant's campaign in the West. Blockade of southern points. Campaigns from and against Richmond. Emancipation. Cost of War in property, expense and life.

14. Reconstruction period. Johnson. Northern radicals. Military reconstruction. Carpet baggers and Ku Klux Klan.

15. The Spoils system and Civil Service reform. State Civil Service.

16. The growth of Industrialism. Monopolies and trusts. Control of Interstate Commerce.

17. The war with Spain and expansion of territory. Porto Rico, Cuba. The Phillipines, Hawaii.

18. Unsolved problems. Relation of the government to big business. The Panama Canal. Conservation of national resources. The Referendum and Initiative. Public health. Pure foods. Sanitation. The government of great cities. Improvement in country life. Agriculture. Mexican Problem. America's Relation to the European War.

SPELLING.

Note—The instruction in spelling is based on the belief that it is "possible to learn to spell and at the same time to express educative thought by writing." The teaching of spelling, therefore, is to be kept in closest association with the various lines of study and is especially to be regarded as an active phase of all written work.

A large portion of bad spelling results from slovenly enunciation. The teacher is to exercise constant care over the children's habits of speaking. Whatever lists of words are presented—in Language, Readings, etc.,—careful drill in clear, forcible, deliberate pronunciation, always with falling inflection, should be given persistently. Accent is secured by pitch better than by stress of voice.

The use of the dictionary for pronunciation mainly, and for definition under such careful oversight by the teacher as insures that the definition defines, should receive faithful attention to teach (a) the swift and direct finding of words; (b) the ready and accurate interpretation of diacritical marks; (c) resort to it for correct spelling; (d) in due time, the selection of definitions from the Unabridged Dictionary.

The speller is not meant to be slavishly followed, it is to be taught. Some words and even whole lessons it may be desirable to omit, or to transpose. Scan rules carefully, to be sure they are clear to the children.

The matter of spelling should receive careful attention in the grades. This is the time to learn to spell. If the work is taught incidentally or in a measure neglected we are sure to produce poor spellers. We must make a serious business of teaching pupils to spell early in life. The problem should be attacked directly—not in a roundabout way. Not many pupils can be taught to be good spellers without considerable conscious effort. Conscious study and much repetition of the sound and symbols that go to make up words are necessary, if one hopes to become efficient in spelling.

Spelling sense should be cultivated. The child should know when he has spelled a word correctly. He should know equally as well when in doubt as to the correct spelling of a word. He should form the habit of going to the dictionary or to other sources for the correct spelling.

The common, every-day words used most frequently in the child's conversation and writing should furnish the list of words for spelling. These will be taken from his written work, from the various lines of study, from the names of objects that lie in his environment, from his games and from carefully selected lists of words found in a good speller. As he advances he will learn how to apply some of the rules of spelling.

Spelling should be related to every study in school. New words should receive attention. In addition there should be a regular time each day for spelling. As soon as it becomes evident that a child has mastered fairly well the art of spelling so that he spells well words found in his written work, he should be excused from this exercise. Much spelling should be done as dictation lessons. Words should be used in their proper setting. However, lists of words should be in the hands of pupils to study. There are many related lines of work that tend to crowd out spelling. There is just one way to learn to spell and that is by spelling.

FIRST, SECOND AND THIRD GRADES.

1. At first identical with writing. (q. v.)
2. Merged in the Reading, and, especially, the written language.
3. Word-building—particularly in games, such as Rhymes.
4. Phonics—introduced gradually by teachers by isolation of initials and terminals, of long and short vowels, until children are prepared to discriminate sounds and appreciate their function as integral parts of the words.

FOURTH, FIFTH AND SIXTH GRADES.

1. Written and oral work on lists drawn from the various exercises and definitely selected to include (a) mis-spelled words; (b) new and difficult words; (c) homonyms, suggested by erroneous usages.
2. Use of dictionary begun and developed as indicated above.
3. Significance of commonest suffixes and prefixes.

SEVENTH AND EIGHTH GRADES.

1. List as in earlier grades.
2. Use of dictionary, developed to include use of unabridged edition in selection of definitions; in tracing derivations; in discriminating synonyms and antonyms.
3. Lists of synonyms and antonyms based on literature and essay work. Continue definite work on homonyms.
4. Derivations, based on literature and essays.

GEOGRAPHY.

BASAL TEXT—TARR AND MC MURRY.

The course in Geography consists mainly of a series of type studies, beginning with home geography and passing out from the home and state to the whole of the United States and of North America; Europe and the other continents follow. In the study of Europe and other continents a constant review of American topics is kept up by means of comparisons.

The text books are chiefly valuable because of the summaries they contain and the maps and statistical material. The constant use of relief and wall maps is emphasized. Sketching of maps on the board by both teacher and pupils to illustrate topics in detail, is specially recommended.

In working out types or units of study, make a careful outline of main topics which is the basis and backbone of the method of treatment. Such outline should be the basis of oral and written reproduction by the children and should be presented in good form in the note book of each child.

The teacher should always keep in mind the physiographic background which furnishes the conditioning circumstances for a large interpretation of the topic—such as mountains, river valleys, climatic condition, rainfall, distance from equator, etc.

Every topic requires careful drills in fixing the more important facts.

THIRD GRADE TOPICS.

I. The Home:
   1. The family.
   2. Home surroundings—house, barn, walks, fence, materials used; yard, garden, trees; location, exposure.
   3. Food—kind, source, preparation.
   4. Clothing—materials; winter and summer.
   5. Heating and lighting—fuel, gas, coal, wood, oil, coke.
   6. Comparisons with homes of children in cold countries; in hot countries; direction of these countries from us.

II. The School Home. (Observations to be made in out-door lessons. Constant drill in direction now and through the year.)
   1. The Normal School.
      Direction and distance from home. Streets or roads leading to it.
   2. The Campus.
      a. Comparison with yard at home.
      b. Buildings, roads, walks, gardens, play-grounds, pond, bridges, woods, rivers, bordering roads.
      c. Boundary lines, roads and creek.
      d. Physical Features.
         Differences in elevation; slopes, gentle and steep; valley, formed by slopes from the building and from Main Street; hills; the run-off of water, relation to slopes; the stream in the valley; soil, in high or low places, relation to drainage; garden; vegetation, relation to elevation and drainage; situation of buildings, relation to physical features.
   3. Buildings.
      Position on campus; materials used in construction; exposure to sun, wind; view from position of school-room in building.
   4. Roads and walks.
      Their entrance, direction from entrance to building; elevation across low places; materials used in construction, laid out with reference to beauty and utility.
   5. An excursion to the tower.
      Observation of features of campus; also position of campus in relation to the town and surrounding farm lands; the greater valley of the Kishwaukee with slopes extending eastward and westward from the creek; drainage toward Kishwaukee; number of farm houses to be seen; the fields and their crops; the Kishwaukee and its meanderings; drainage of surrounding country.

6. A map-game out-of-doors, to show relative position of objects on the campus. Let the children form in lines to represent boundary lines; also take position of buildings, pond, etc. (Correct orientation should be observed always.)
7. Sand-map of campus.
   This should be worked out by teacher with class. Then each child should be given sand-pan and sand, and allowed to make his own map. The buildings, roads, pond and creek, bridges, etc., may be represented as the child himself suggests.

III. Roads, the means of transportation from place to place.

1. The road in the process of building on the campus or in the neighborhood. Laying out; grading; excavation; curb; pavement, materials, preparation and use.
2. Use of roads on the campus and in the town; reasons for paving streets.
3. Country road on west side of campus.
   Grading; implements; drainage; use of country roads; farmer's need for good roads.

IV. The Farm in the Autumn.

1. Excursion to a farm to observe,—
   - a. What the farm consists of—fields, pastures, orchard, barnyards, buildings.
   - b. Products of the farm—grain, stock, milk, fruit, garden truck.
   - c. Farm implements—machinery, wagons, etc.
   - d. Care of products for home use.
   - e. All farm activities,—harvesting, feeding cattle, milking, etc.
2. Discussions growing out of excursions.
   - a. Disposal of farm products,—grain—use on farm, shipment into town and to Chicago on railway.
     Stock—the dairy and dairy products, taking of milk to the creamery; cattle, shipped to Chicago stock-yards.
     Garden-truck—use at home, shipment to market, poultry and eggs.
   - b. Things needed by farmer, not produced on the farm: machinery; tools; wagons; harnesses; lumber; seed; groceries; clothing; paper and magazines.
3. Excursions to the creamery and to the grain elevator follow from the discussion of the disposal of the products of the farm.

V. The Creamery.

1. Visit to creamery early enough in the morning to see the farmers bring in the cans of milk in their wagons.
   Observe:—
   Emptying of cans.

Scalding of cans with steam.
Reception of milk in reservoir.
Separator.
Bottling of milk and cream.
Churning.
Preparations for delivery.
Method of cleansing bottles.

2. Discussion following excursion.
   a. Work in the creamery, cleanliness, etc.
   b. The Dairy,—care of cows and stable; cleanliness of hands and clothing of milker.
   c. Pure milk; dangers from impure milk.

VI. The grain elevator—excursion to elevator to see how the farmer disposes of the grain which is not used on the farm.

Building; side-tracks from the railway; method of elevating the grain; method of filling the cars.

VII. Trade—selling and buying, exchange of farm products for money, or for things which are needed on the farm.

Comparison with home, and methods of supplying the needs.

VIII. The Feed-Store.

1. Preparation in school for excursion.
2. The excursion, observation of
   a. Kinds of feed in the store—oats, bran, etc.
   b. Ways in which it is cared for.
   c. Ways of selling—measurement, weighing, handling.
   d. Price.
   e. People who buy.
   f. Source of supply from the store-keeper.
3. Discussion.

IX. The Blacksmith Shop.

1. Preparation for excursion—discussion of the need of the farmer or anyone who owns a horse for a place to shoe his horses.
2. The excursion—observation of
   The shop, forge, anvil, hammers, bellows, etc.
   The shoe and nails.
   Shoeing a horse.
   Time and cost of shoeing a horse.
3. Discussion, using horse's hoof, shoe and the nails.

X. The Wagon Shop.

1. Discussion—in order to facilitate trade between the farm and the town, the farmer must keep his wagon in good condition and his horse shod.
2. Excursion.
   The shop, anvil, forge, bellows.
   The smith at work.

Working and shaping the iron into link of chain or bolt.

Putting new tire on wagon-wheel.

3. Discussion.

XI. The Grocery-store—an excursion.

1. Classification of things seen—

Staple goods in bulk.
Canned goods.
Preserved goods.
Spices.
Vegetables.
Fruit.

2. Sources of various things from warm or cold countries.

XII. The Meat-Market—an excursion.

Different kinds of meat and the animals from which they come.

XIII. The Beginning of Map-Making—

1. The notion of the map introduced by the Map game, and the sand model of the campus, should be developed now by drawing on the floor of the school-room, with chalk, the outline of the campus, placing the buildings and roads in their relative places (keeping things oriented); then each child should trace his road to his home, to the farm he visited, to the post-office, the railway station, the creamery, and whatever else he has visited; let him give direction at each turn after leaving the school-room. Develop the notion of scale, by making the figures which represent the campus smaller and still smaller; then locate Sycamore and Malta; extend the map by continuing the railway east to Chicago, and Lake Michigan, and west to the Mississippi River.

2. The map should grow gradually to make Illinois; name some of the surrounding states, the Illinois River, Ohio River, Wabash River; follow Mississippi River to Gulf; go westward over mountains to Pacific Ocean; eastward to Atlantic Ocean; North America.

3. At various points sketches should be made on large piece of paper and then hung on the north wall, with drill in direction.

XIV. The World—whole: A Relief Globe (preferably the Jones model) should be introduced and continents and ocean basins distinguished. Water placed in depressions will help give notion of oceans and ocean beds.

1. Locate North America. Drill in direction, as on wall map. Atlantic Ocean, Pacific Ocean.

2. Other continents—South America, Africa, Eurasia, Australia, Antarctica.

3. Regions of cold; regions of heat. North and South Poles. Equator.
4. Follow on globe journeys which amy be taken to different parts of the world as suggested by such events as
    a. Roosevelt's trip to Africa.
    b. A letter written to Filipino children.
    c. A visit to the home of the Esquimo boy.

XV. The Farm in Spring.
Comparative activities, appearance, crop, etc., with observations made in fall, also with school garden.

XVI. Building of a house (observation of).
Preparation for building—materials used—source of materials—workmen.

XVII. Illinois and Mississippi basin, the great farming region of North America. Transfer from the relief model of the world to the relief model of the United States. Drill on location of Chicago and Lake Michigan, Mississippi River, Illinois; mountains in East and west, forming the basin of the Mississippi River; oceans on east and west; Gulf of Mexico. Model this region in sand and clay, showing slopes and reason for direction of rivers.

FOURTH GRADE.

1. The prairies of DeKalb County. The Prairie Regions and their Development.
    a. Wild prairie; early settlement along streams and forests; prairie fires.
    b. Early Indian life. Shabbona. Map of the Prairie Regions.
    c. Corn and stock-raising. Shipping to Chicago.
    d. Tree-planting. Tile-draining. Roads and bridges.
2. The Illinois River. Map. Streams tributary to the Mississippi and Ohio.
    a. Scenery and bluffs. Starved Rock, Deer Park.
    b. Swamps and bayous. Duck hunting.
    c. The canal connections with Chicago.
    d. Cities.
    e. Products shipped. Corn, coal, stone.
    f. Proposed deep water way.
    g. Other rivers corresponding to the Illinois,—Wisconsin Ohio, Kentucky, Tennessee, Minnesota, Iowa, Missouri, Arkansas. Map..
    h. Other canal connections with Great Lakes.
    i. Review story of LaSalle and Tonty.
3. A coal mine and coal fields of Illinois and Mississippi Valley.
    a. Location and sinking of shaft.
    b. Process of ventilating and mining.
    c. Dangers and protections.
    d. Use of coal for houses, railroads and factories.

- e. Shipping of coal by rail and by water.
- f. Location of Illinois coal field; Iowa and Missouri field; Western Appalachian coal field. Map of coal field.

4. Trip on the Upper Mississippi.
    - a. Steamboat journey. Map.
    - b. The three cities, Davenport, Rock Island, and Moline.
    - c. Comparisons with the cities on the Upper Mississippi—Winona.
    - d. Lake Pepin.
    - e. St. Paul, head of navigation.
    - f. Comparison with trip on Ohio and Missouri. Contrasts. Maps.
    - g. Review the story of Hennepin. Also of Marquette and Joliet.
5. Minneapolis. The lumber and flour business of Minneapolis.
    - a. Pineries and lumbering. Sawmills.
    - b. Wheatfields and mills; water power; railroads. Map.
    - c. Comparisons with the cities on the Upper Mississippi—Winona, etc.
    - d. Lumber cities along the Great Lakes and in New England—Buffalo, etc.
    - e. Lumber cities along the Appalachians—Williamsport, etc.
    - f. Minneapolis and St. Paul compared with Pittsburg and Albany.
6. Lake Michigan and the Great Lakes.
    - a. Size and depth of lakes.
    - b. Commerce on Great Lakes; harbors; the Soo Falls and Locks.
    - c. Products shipped east and west.
    - d. Cities on the Lakes. Docks and harbors.
    - e. Summer resorts on the Lakes.
    - f. Comparison of the lake cities with those on Upper Mississippi and Ohio Rivers.
    - g. Story of Marquette and Joliet. Story of LaSalle.
7. Tobacco Culture in Kentucky and Tennessee.
    - a. The tobacco field; negro labor.
    - b. Sheds and curing.
    - c. Louisville as a tobacco center.
    - d. Tobacco states—Kentucky, Tennessee, Ohio, Virginia, and Connecticut. Map of tobacco states.
    - e. Tobacco in Cuba.
    - f. Story of Boone and Robertson. Lincoln, John Smith.
8. Trip on the Lower Mississippi. Map.
    - a. Steamboat trip from Cairo to Delta.
    - b. Sights on a steamboat trip.
    - c. Floods and levees.
    - d. Jetties on the delta.
    - e. Contrast of Lower and Upper Mississippi.
    - f. New Orleans and shipping.
    - g. Stories of LaSalle and Lincoln.
9. Cotton fields.
    - a. Raising the cotton. Negro labor. The boll weevil.
    - b. Ginning of cotton and bailing.

  - c. Shipping from Memphis, Savannah, Galveston and other places.
  - d. The cotton states. Map showing cotton belt.
  - e. Shipments to New England and England. Map.
  - f. Southern cotton mills.
  - g. Wool production in Ohio and other states.
  - h. Story of DeSoto.

10. Sugar Plantation in Louisiana.
  - a. Raising sugar cane on the plantation.
  - b. Methods of milling. Old and new methods.
  - c. Refining sugar. New Orleans. Map of sugar states.
  - d. Beet sugar in California, Colorado and other states. Map.
  - e. Maple sugar in Vermont. Sorghum.
  - f. Sugar in Cuba and Philippines. Map.

11. The Cattle Ranches of the Plains. Map.
  - a. The cattle ranch.
  - b. The round up.
  - c. Texas ranches and northwest driving. Map.
  - d. Shipping to the corn belt. Map of western states.
  - e. Packing houses in Omaha and Chicago.
  - f. Sheep ranches on the plains and in the mountains.
  - g. Cattle and stock raising in the corn belt.
  - h. Stories of Fremont. Parkman's Oregon Trail, and Lewis and Clark.

12. Springfield, Illinois.
  - a. State house. Pictures.
  - b. Three departments of state government.
  - c. Review of town and county government.
  - d. Lincoln's home and monument in Springfield. Pictures.
  - e. Other states and capitals, Indianapolis, Madison, etc.
  - f. Story of Lincoln, Grant, George Rogers Clark.

FIFTH GRADE.

I. Niagara Falls.
  1. Location of Falls and their relation to physiography of the lake region.
  2. Scenery of the Falls and Gorge. Other great falls in U. S. Yellowstone. Great Falls, Mont.; Shoshone Falls, Idaho.
  3. Recession of the Falls. Compare with Minneapolis.
  4. The Falls as an obstruction to commerce. Compare with Sault Ste. Marie. Rapids on Lower St. Lawrence. Canals around the Falls. The Erie Canal. Buffalo due to the Falls. Falls at Louisville, Kentucky.
  5. Water power at the Falls. Electrical power and how produced. Use of the power at the Falls and in Buffalo. Compare with the water power at Glenns Falls, at Rochester, at Minneapolis; the Merrimac River and Fall River, Mass.; Lewiston and Augus-

ta, Maine; Richmond, Va.; Great Falls, Mont.; Canal power at Chicago; Snake River Falls in Idaho.

II. The Hudson River.
  1. Voyage up the River. Scenery at Palisades, Highlands, etc. Compare scenery with Delaware Water Gap, Susquehanna, Potomac at Harper's Ferry, James River breaking through the Blue Ridge, Columbia at the Cascades, Royal Gorge of the Arkansas, Yellowstone River and Gorge.
  2. Hudson River a Drowned Valley. Tide to Albany, deep and broad. Compare with Delaware Bay, Chesapeake Bay. Carolina rivers, St. Johns, Maine rivers.
  3. Commerce of the Hudson River, Passenger steamers, canal boats and barges, brick yards and stone quarries along the river.

III. Erie Canal and connections with Lake Erie and Lake Ontario. History and importance. Cost of shipment by canal. Recent enlargements of canal. Products of lake regions shipped eastward by canal and Hudson River. Lake Champlain canal. Lumber shipment.
  1. Hoosac Tunnel and connection with Boston. Manufactured goods sent west.
  2. New York Central Railroad parallel with Hudson River and Erie Canal.

IV. The White Mountains.
  1. Physiography of the White Mountain group.
  2. Ascent of Mt. Washington.
  3. Mountain Hotels and Resorts.
  4. Lake Winnepesaukee and other New England resorts.
  5. The Adirondacks in summer. The St. Lawrence Islands.
  6. The Catskills. Hotel and summer houses.
  7. The Mountain resorts of Pennsylvania and Virginia Springs.
  8. Asheville and the Southern Apalachians.
  9. The Seashore Summer Resorts. The Main Coast, Old Orchard, Nantucket, Newport, Long Branch, Ocean City; the Florida Coast in winter; St. Augustine, Palm Beach.

V. Gloucester and the Cod Fisheries.
  1. Preparation and voyage of Fishing Schooner to the Banks.
  2. Gloucester and the fishing schooners. Fishermen's families.
  3. Curing and packing the fish. Fresh fish.
  4. Inshore fishing, the dories. Lobster fishing.
  5. Related industries at Gloucester. Rope making and ship's supplies. By-products of the fisheries; glue.
  6. Other fishing towns of New England; Marblehead; Boston; Salem.
  7. Oyster fishing in Long Island Sound and in the Chesapeake. Canning and shipping oysters at Baltimore. Shad fishing in Chesapeake Bay. Other oyster fisheries along the Atlantic Coast to Florida.
  8. Lake Fisheries on Lake Erie and other lakes.

VI. Boot and shoe Factories about Boston.

1. A shoe factory. Machines and workers. Investment.
2. Source of leather. The tanneries in Chicago, Omaha, Baltimore. Hides from cattle ranches and stock producing regions. Hides from Argentina.
3. Kinds of leather used. Foreign supply.
4. Shipment of shoes westward.
5. Extent of manufacture in New England and in other states.
6. Other leather goods. Harness and saddles; belting; satchels and bags; gloves and mittens.
7. Comparison with rubber goods and manufacture, Akron, Ohio. Rubber tires for buggies, bicycles, and autos.

VII. Ship Building.

1. Bath and ship building in Maine. Wooden schooners. Lumber, and the forests as sources of materials.
2. Ship building at Philadelphia. Ship Yards. Iron and steel ship construction. Construction of a ship.
3. The building of war vessels. Steel armor plate.
4. The U. S. Navy at Brooklyn, Norfolk, etc.
5. Ship building at San Francisco.
6. Annapolis and the Naval School.
7. American ship lines on the ocean, and coasting vessels.
8. Steamship lines on the Great Lakes.

VIII. Florida Fruit and Truck Farming.

1. Orange groves; climatic conditions; frosts and how guarded against. Orange groves in California. Competition. Grape fruit.
2. Florida celery, lettuce, cabbage, tomatoes, potatoes. Early spring shipment by rail to New York, Boston, Philadelphia, Chicago. Hothouse products at the north. Cucumbers, onions, etc.
3. Berry farming in the Carolinas: Strawberries, melons. Peaches and pears from the south. Similar conditions in the Mississippi Valley.
4. Intensive truck farming in Virginia, Maryland, New Jersey.
5. The Atlantic Coast Line R. R. The Coast Line steamers. Old Dominion, Clyde Line.
6. Chief lines of traffic by rail and by water between North and South.
7. Review of story of Ponce de Leon.

IX. Pike's Peak.

1. General physiographic survey of region.
2. Trip to top of Pike's Peak; railroad; views; Long's Peak, Fremont's Peak, Mount of the Holy Cross.
3. Interesting side trips, Cheyenne Canyon, Garden of the Gods, Cave of the Winds (Mammoth Cave, Luray).
4. Colorado Springs as a summer resort,—springs, hotels. Compare with Hot Springs. Other resorts along the Rockies. Yellowstone Park, Yosemite Valley in California.

5. Compare with Mt. Washington and White Mountains.
6. Review story of Pike; Fremont; Lewis and Clark.

X. Big Irrigation Ditch at Denver.
1. Survey of irrigation lands along the Platte and relation to Rocky Mountains.
2. Digging and constructing the ditch. Flumes. Source of water. Reservoirs in mountains.
3. Conflict of water rights; how settled; legislature.
4. Drawing water from ditches. Distributing.
5. Effects of water on dry land. Crops.
6. Market for products. Cities and mining camps.
7. Irrigation by small streams and ponds.
8. Irrigation streams along the eastern foot hills for 1,200 miles. Yellowstone River, Rio Grande.
9. Other irrigation districts. Utah, California, Colorado River, Idaho, Montana, etc.
10. Government projects. Roosevelt dam on Salt River. Arizona. General plan of government.

XI. Gold Mining in California.
1. Early gold discoveries in California.
2. Placer mining. The cradle, etc.
3. Quartz mining. Stamp mills.
4. The mining districts of California.
5. Smelting the ores.
6. Silver and gold mines in Colorado and Cripple Creek.
7. Copper mines at Butte and in Michigan.
8. Distribution of mining through western states, as Arizona, Nevada, Idaho, etc.
9. Cities as smelting centers, as Pueblo, Great Falls, Butte.
10. Products of mines compared with products of irrigation and fruit raising.
11. Review of trip of the Goldseekers to California in '49.

XII. Salmon Fisheries on the Columbia.
1. Life and migrations of the salmon.
2. Modes of fishing along the Columbia.
3. Description of cannery.
4. Extent of Salmon fisheries along the Columbia.
5. State and natural hatches for protecting the salmon fishing industry.
6. Salmon fishing along Puget Sound and on Fraser River. British Columbia.
7. Seal fisheries along the coast of Alaska.
8. Fisheries of the Pacific coast compared with those of Atlantic coast.
9. Review Lewis and Clark expedition.

SIXTH GRADE.

General survey of mountains and plains of North America.

1. Pittsburg and Steel Production in the United States.
    - a. Johnstown and Cambria Steel Co.
    - b. Pittsburg steel production.
    - c. Other centers on the Lakes; at Birmingham, etc.
    - d. Iron mines and steel production in the United States.
2. The Cotton Mills. Textile Industries of the United States.
    - a. Cotton mills at Lowell, Manchester, and Fall River.
    - b. Cotton mills in the south.
    - c. History of spinning and weaving. Woolen and silk manufacture.
3. The Appalachian Mountains. The Rocky Mountains.
    - a. Physiography of the Appalachian rivers.
    - b. Forests and mineral production in the Appalachians.
    - c. Farming and stock raising.
    - d. Roads across the mountains.
    - e. Cities and history.
    - f. The Rocky Mountains.
4. The Pennsylvania Railroad. Railroad System of the United States.
    - a. Early history and growth of the Pennsylvania system.
    - b. Comparison with New York Central, Baltimore and Ohio, etc.
    - c. The Union Pacific and other Pacific railroads.
    - d. North and South routes in the United States.
5. The Mississippi River. Type of Great Commercial River.
    - a. Survey of Mississippi Basin as a whole.
    - b. Floods on the Ohio and Mississippi.
    - c. Improvements in navigation.
    - d. Important areas of production in the Mississippi Valley.
6. New York City. Survey of the cities of the United States.
    - a. The harbor and commerce of New York.
    - b. Rapid transit; water supply.
    - c. City government; charities; education.
    - d. Manufactures.
    - e. Comparison with Philadelphia, Chicago, and other cities.
7. The Alaskan Coast.
    - a. Mountains and glaciers.
    - b. Forests.
    - c. Fisheries.
    - d. Summer excursions along the coast.
8. The City of Quebec.
    - a. History of Quebec.
    - b. The French people.
    - c. Comparison with Montreal and other cities in Canada.
9. The City of Mexico.
    - a. Advantages of its location on the Plateau.
    - b. History of the city. Spaniards and Indian races.
    - c. Public buildings and scenes in Mexico.

  - d. Contrast with coastal cities.

10. The Island of Cuba.
    - a. Physical and climatic features.
    - b. History of Cuba.
    - c. Products of a warm climate.
    - d. Comparison of other West Indian Islands.
11. North America as a Continental Type.
    - a. Mountain systems and plateaus.
    - b. Its river systems.
    - c. Climatic features.
    - d. Its regional groupings.
    - e. Its races and their distribution.
    - f. Marked coastal features and undulations.

SEVENTH GRADE.

General Survey of Europe.
  - a. Physical features, mountains and rivers.
  - b. Nationalities and their location.
  - c. Penisulas and islands.
  - d. Comparison with North America.

1. Steamship voyage from New York to Hamburg.
    - a. Harbor of New York.
    - b. The steamship.
    - c. Ocean experiences.
    - d. Voyage through the channel.
    - e. Hamburg.
2. The British Isles. The Island Kingdom.
    - a. Physical features and climate.
    - b. Natural resources.
    - c. People of England, Ireland and Scotland.
    - d. Commercial advantages of England.
3. Seaport Cities of Great Britain.
    - a. Glasgow. Harbor improvements and ship building.
    - b. Liverpool. Shipping.
    - c. Manchester ship canal.
    - d. Cardiff and Bristol. Harbors and shipping.
    - e. London. The river and docks.
    - f. New Castle and the Tyne ports.
    - g. Comparisons with Antwerp, Hamburg, etc.
4. The Alps. The Mountains and Plains of Europe.
    - a. Upheaval and mountain building.
    - b. Glaciers. The glacial period in Europe and North America.
    - c. Lakes and rivers.
    - d. Switzerland resorts, Lucerne, roads and passes.
    - e. Relation to Swiss history.
    - f. Comparisons of mountains, rivers, etc., with North America.
5. The Rhine and Other Large Rivers of Europe.

- a. Physical features of the Rhine Valley.
- b. Castles. Fortified cities. Cologne Cathedral.
- c. Historical and literary associations.
- d. Comparison with other rivers in Europe and in United States.

6. Berlin, the Kaiser City.
    - a. Plan of the city. Monuments and buildings.
    - b. The military center of Germany.
    - c. Comparison with other capital cities.
7. The German People.
    - a. Warlike historical character of the Germans.
    - b. German characteristics, social life, music, education.
    - c. Customs in home life.
    - d. Germanic races in Europe. The English.
    - e. Comparison with Latin and Slavic races.
    - f. Comparison with races in the United States.
8. Holland, the Delta land.
    - a. The Delta of the Rhine.
    - b. Building the dikes. The canals in summer and winter.
    - c. Industries and commerce of the Dutch.
    - d. The Dutch in New York.
9. Paris—the City of Modern Art.
    - a. Improvements since the French Revolution.
    - b. The development of art in Paris. Museums, etc.
    - c. The rebuilding of Vienna.
    - d. Other cities of art, Dresden, Rome, etc.
10. Lyons and the Silk Production.
    - a. The silk worm and silk production.
    - b. The manufacture of finer textiles.
11. Italy. The Importance of Peninsulas in Europe.
    - a. Physiography; its peninsular character.
    - b. Its history and political importance.
    - c. Full comparison with other peninsulas, as Spain, Scandinavia, Denmark, Balkan States.
12. Rome, The Ancient City and the City of the Popes.
    - a. The ruins of Ancient Rome.
    - b. The Vatican.
    - c. Compare with Athens, Constantinople, Jerusalem, Granada, Carthage.
    - d. Religions in Europe.
13. St. Petersburg, the City of Peter the Great.
    - a. Seat of Russian Government.
    - b. Comparison with Moscow.
    - c. Commerce.
    - d. Trans-Siberian Railway building. Influence on Russia and Japan. Comparison with Pennsylvania Railway and Union Pacific.
14. The Fjord Coast of Norway.
    - a. The Fjords.

b. Forestry.
c. Fishing.
d. Climate.

15. Europe as a Whole.
    a. Mountains and plains.
    b. Physical resources.
    c. Climatic conditions.
    d. Gulfs and seashore.
    e. Compared with North American Peninsulas.
    f. Varied languages and nationalities.

EIGHTH GRADE.

1. General survey of Asia.
    Mountains, plateaus and river systems.
    Centers of population, deserts.
    Nationalities. History of ancient races.
2. The Suez Canal; Route from England to India.
    Comparison of old and new routes to India.
3. India, the Chief of England's Possessions.
    History of English influence in India. Clive.
    The British government and its work in India.
    Variety of races and religions in India.
    Other possesssions of England in Asia and the East Indies.
4. Japan and the Progressive Character if Its People.
    Recent history of Japan.
    Customs of the people.
    Contrast with China.
5. The Yangste River.
    The delta land. Its products and population.
    Compare the Yangste with the Ganges and Indus.
    Compare with the Mississippi.
6. Java—the Dutch Colony.
    Its products and commerce.
7. Australia—Its History.
    A penal colony.
    Gold discoveries.
    Sheep ranches and meat production.
9. New Zealand.
    Its physical characteristics and resources.
    Compare with Great Britain, Japan, Madagascar.
    Compare with the Yellowstone country.
10. Cape Colony, Its History.
    Expansion of English Influence in Africa.
    Compare with colonies of France, Italy, Germany and Portugal in Africa.
    The union of British colonies in South Africa.
11. The Congo River.
    Exploration of Central Africa by Livingstone and Stanley.

  - The Congo Free State.
  - Products and commerce of the Congo Valley.
  - Comparison with the Nile river.
  - Comparison of the Congo and Amazon.
12. The Desert of Sahara.
    - Physical and climatic features.
    - A caravan journey. Caravan routes.
    - Desert cities and oases.
    - The Bedouin tribes and mode of life.
    - Compare with the great deserts of Asia.
    - Review deserts of the United States.
13. The Amazon River.
    - Tropical forests and scenery.
    - Industries of the Amazon forest. Commerce.
    - Animal life.
14. A Coffee Plantation in Brazil.
    - Raising and curing coffee.
    - Rio Janeiro and Sao Paulo as shipping centers for coffee.
    - Coffee production in other parts of South America, West Indies, Africa, etc.
    - Cocoa and its production compared with coffee.
    - Tea producing countries compared with coffee countries.
15. Argentina, a Typical Spanish State.
    - Its history and that of other Spanish states in South America.
    - The La Plata Valley and its great industries.
16. The Panama Canal.
    - Its history, difficulties and expense.
    - Its probable effects. Comparison with other canals.
17. The United States and Her Colonies.
    - Comparison with British and other colonial systems.
18. The Pacific Ocean.
    - Size and comparison with other oceans.
    - Ocean currents and movements.
    - Great traffic routes across the oceans.

ARITHMETIC.

Basal Text—Wentworth and Smith.

In the past there has been an attempt to do too much under the head of arithmetic. There has not been time to give attention to things that are fundamental. There are a few things primarily essential in arithmetic that should be learned by every child if a thorough mastery of this subject is to be acquired. He should be able to make practical use of the arithmetical facts and principles learned in school.

There should be more purposeful drill upon the necessary number facts and processes until the child becomes perfectly familiar with them. Such processes as addition, subtraction, multiplication and division should be mastered early in the school life of the child because they play so important a part in all work in arithmetic that is to follow. Often much time is wasted in the upper grades learning facts and processes that should have been thoroughly mastered in the lower grades when the child was passing through the stage in which this work can be done most easily. Much drill and repetition for accuracy and speed should be given day after day along with the other work of arithmetic to the end that the child may early put into the background, through thorough mastery, the mechanical difficulties of number. He should be at home and ready in thinking number and in the manipulation of number. He should think numbers as readily as he thinks in other subjects. This will be brought about only by vigorous, persistent drill upon the mechanical side of number and the application of number in a rational, sensible way to the every-day problems that surround the child. If the above is attended to in the lower grades it will be possible to do a higher and more practical kind of work in the upper grades.

The matter of having the child reason about everything he does in arithmetic, especially in the lower grades, can be overdone. Of course he needs to do rational thinking, but there is no place for fine-haired explanations that are often required. Many things in arithmetic do not need to be explained. They need to be done and results secured with the least amount of fuss possible.

There is no place in school where time can be saved to better advantage than in connection with the arithmetic recitation. Too much explanaing is done; non-essential work takes up time; the movement of the recitation is sluggish; there is no completed task with an essential piece of knowledge well mastered. Too many of our pupils are but half-prepared to go on because we have not been rigid enough in holding them up to standards that are within their reach.

The teacher of mathematics must be alert in order to communicate mathematical life to her pupils. She must have clearly in mind what she is to accomplish in the way of results. She must know how to secure these results on the part of her pupils with the least expenditure of energy. Pupils should acquire a mastery over number that makes them feel at ease when dealing with number relations.

Following is the outline of topics or units of study for the grades:

NUMBER WORK.

FIRST GRADE.

1. Naming of any group of objects through ten.

2. Writing figures through ten.

Addition of any two numbers the sum of which does not exceed ten. These facts are fixed through the playing of games.

4. Expression with figures and signs of the addition facts given above, e. g.

$$\begin{array}{ccccc} 1 & 2 & 1 & & 1+3=4 \\ 1 & 1 & 2 & \text{and} & 2+2=4 \\ 2 & 3 & 3 & & 3+1=4 \end{array}$$

5. Addition of several one-place numbers, the sum not exceeding ten, and the addenda being only one and two. Thus:

$$\begin{array}{cc} 1 & 2 \\ 2 & 1 \\ 2 & 2 \\ \cline{1-1} & 1 \\ & 2 \\ \cline{2-2} \end{array}$$

Quick drill of this kind a very few minutes every day during the last two months.

SECOND YEAR.

1. Review the addition facts learned the first year, and Topic 5 of that year's work, every day, a very short time.

2. Subtraction of any number not exceeding 9 from any number not exceeding ten.

3. The expression by figures and signs of any subtraction fact in which the minuend does not exceed 10, e. g.

$$\begin{array}{cccc} & & & 10—1 \\ 10 & 10 & & 10—2 \\ -2 & -8 & \text{or} & 10—3 \\ \cline{1-1} \end{array}$$

4. Measurement of United States money; cents, nickels, and dimes, and the relation of any one to the others.

5. The meaning of any two-place number (taught by the use of Kindergarten sticks or toothpicks taken singly and in bundles of ten each).

6. Addition of any two-place numbers, the sum of neither the units nor the tens exceeding 9.

7. Addition of several one-place numbers, the addends being 1, 2, and 3, Take in place of the previous drill suggested in Topic 1. *A little of this every day in the term,* increasing in difficulty as the pupils gain skill.

8. Subtraction of any two-place subtrahend from a three-place minuend the tens and units of which exceed those of the subtrahend.

9. The multiplication table of ten, through 9 tens.

10. Multiplication table of 11 through 9 elevens.

11. Addition of two one-place numbers with sums 11—18 and no addend greater than 9. Facts fixed through playing of games.

12. Addition of several one-place numbers, the addends being 1, 2, 3, and 4. This is to take the place of the daily drill suggested in Topic 7.

13. Subtraction of a one-place number from any minuend 11—18, with a remainder not greater than 9.

14. Measurement of time—Telling time by the clock.

15. Multiplication table of 5.

16. Addition of any two-place number and 5.

17. Addition of several one-place numbers with addends of 1, 2, 3, 4, and 5. This takes the place of the daily drill suggested in Topic 12.

18. Measurement of liquids.

19. Multiplication table of 2.

20. Multiplication by 2 of a two-place number, the tens and units of which do not exceed 4, thus:

$$\begin{array}{rrrrrr} 21 & 14 & 22 & 42 & 31 & 23 \\ 2 & 2 & 2 & 2 & 2 & 2 \\ \hline \end{array}$$

21. Measurement of United States money: Dollar, half-dollar, and quarter-dollar, the relation of each to the others and of each to cents, nickels and dimes.

(a) Drills every day on the addition of any two one-place numbers, or (b) the multiplication tables of 10, 11, 5, and 2.

THIRD YEAR.

Review (a) As often as necessary drill on the addition of any two one-place numbers.

(b) Review frequently if necessary, the multiplication tables of 2, 5, 10, and 11.

(c) Give short, rapid drills every day in adding numbers with addends (for the present) of 1, 2, 3, 4, and 5.

1. The meaning of a three-place number, taught by use of toothpicks or Kindergarten sticks, singly, in tens, and in tens of tens.

2. Addition of two- and three-place numbers.

3. Multiplication of a three-place number by 2 and by 5.

4. Writing and reading of Roman Numerals through C.

5. Factoring. Why a change in the order of factors does not affect the product, e. g.

Why 3 4's equal 4 3's.

. . . .
. . . .

6. The division table of 10.

7. The division table of 2.

8. The division table of 5.

. . . .

9. The division table of 11.

10. The multiplication table of 9.

11. The multiplication of any two- or three-place number by 9.

12. Addition of any two-place number and 9. The pupils see, e. g., that since the sum of 3 and 9 ends in 2, the sum of two-place number ending in 3 added to 9 will end in 2 and the number of tens will be increased by 1 ten,

$$\begin{array}{r} 43 \\ 9 \\ \hline 52 \end{array}$$

13. Addition of several one-place numbers, the addend being 1, 2, 3, 4, 5, and 9. This takes the place of the daily drill of addends 1, 2, 3, 4, and 5.

14. The subtraction of 9 from any two-place number ending in 0, 1, 2, 3, 4, 5, 6, 7, or 8. Quick work, the pupils seeing the relation between

$$\begin{array}{r} 12 \\ -9 \\ \hline \end{array}$$

and any other two-place number ending in 2 from which 9 is taken.

15. The division table of 9.
16. Fractional parts of 1.
    a. Halves, fourth, eighths.
    b. Third and ninths.
    c. Thirds, sixths and twelfths.
    d. Fifths and tenths.
17. The measurement of lengths.
18. The multiplication table of 3.
19. Multiplication of a two- or three-place number by 3.
20. Addition of 3 to any two-place number.
21. Subtraction of 3 from any two-place number ending in 0, 1, or 2.
22. Division table of 3.
23. Factoring of like products in the multiplication tables of 3 and 9.
24. Unit fractions of numbers greater than one.
    a. 1-2 of multiples of 2 through 24.
    b. 1-4 of multiples of 4 through 36.
    c. 1-3 of multiples of 3 through 36.
    d. 1-10 of multiples of 10 through 100.
    e. 1-5 of multiples of 5 through 100.
25. The measurement of time. Comparative lengths of seconds, minutes, hours, days, months, and years.
26. The measurement of weight.
27. Multiplication table of 4.
28. Multiplication of any two- or three-place number by 4.
29. Factoring of like products in the multiplication tables of 2 and 4.
30. Addition of 4 to any two-place number ending in 6, 7, 8, or 9.
31. Subtraction of 4 from any two-place number ending in 0, 1, 2, or 3.
32. Subtraction from a three-place minuend.
33. Division table of 4.
34. Division of a two- or three-place number by 2, 3, 4, 5, and 9.

FOURTH YEAR.

Drills. (a) Addition of columns of figures, the addends being 2, 3, 4, 5, and 9. Quick work two or three minutes a day.

(b) Review multiplication tables of 2, 3, 4, 5, and 9, also 10 and 11 if necessary. Two or three minutes a day given to this.

1. The meaning of a four- and of a five-place number. Teach the place value of figures.
2. Addition of two-, three, and four-place numbers.
3. Subtraction from a four-place number.

4. Multiplication table of 8.

5. Multiplication of two-, three-, and four-place numbers by 8.

6. Addition of any two-place number and 8.

7. Additions of columns of figures, the addends being 2, 3, 4, 5, 8, and 9. This takes the place of the daily drills before given.

8. Multiplication of any four-place numbers by 2, 3, 4, 5, and 9.

9. Division table of 8.

10. Division of three- and four-place numbers by 8.

11. Division of any four-place numbers by 2, 3, 4, 5, and 9.

12. The reading and writing of Roman Numerals through the number of the present year.

13. The writing of United States money.

14. Addition of United States money.

15. Subtraction of United States money.

16. Multiplication of United States money by 2, 3, 4, 5, 8, and 9.

17. Partition of numbers occupying from two to four places inclusive.

18. Partition of United States money.

19. Multiplication table of 6.

20. Multiplication of any two-, three-, or four-place numbers by 6.

21. Addition of any two-place number and 6.

22. Addition of several one-place numbers, the addends being 2, 3, 4, 5, 6, 8, 9. This takes the place of the daily drill called for in Topic 7.

23. Subtraction of 6 from any two-place number ending in 0, 1, 2, 3, 4, or 5.

24. Subtraction of numbers containing 6 from three- or four-place numbers.

25. Division table of 6.

26. Division of any two-, three-, or four-place number by 6.

27. Multiplication table of 12.

28. Division table of 12.

29. Multiplication table of 7.

30. Multiplication of United States money by 7.

31. Addition of any two-place number and 7.

32. Addition of several one-place numbers, 1-9, in which 7 often occurs. This takes the place of the daily drill suggested in Topic 22.

33. Addition of two-, three-, and four-place numbers in which 7 often occurs.

34. Subtraction of 7 from any two-place number ending in 0, 1, 2, 3, 4, 5, or 6.

35. Subtraction from three- and four-place numbers of numbers in which 7 frequently occurs.

36. Division table of 7.

37. Division of any three- or four-place number by 7.

38. Multiplication of a two-, three-, or four-place number by a two-place number.

39. Multiplication of a three- or four-place number by a three-place number.

40. Square measure.
41. The meaning of the numerator and denominator of a fraction.
42. Reduction of improper fractions to whole or mixed numbers.
43. Reduction of proper fractions.
44. Addition of a few proper fractions.
    - a. Halves and fourths.
    - b. Thirds and sixths.
    - c. Thirds and ninths.
    - d. Fifths and tenths.
    - e. Halves, fourths and eighths.
    - f. Halves, fourths and twelfths.
    - g. Thirds, sixths and twelfths.
45. Subtraction of proper fractions, the ones used in Topic 44.
46. Multiplication of a proper fraction by a whole number.
47. Multiplication of a whole number by a proper fraction.
48. Addition of mixed numbers containing fractions which pupils know how to reduce and add.
49. Subtraction of mixed numbers containing fractions which the pupils know how to reduce.
50. Multiplication of a mixed number by an integer.
51. Multiplication of an integral number by a mixed number.
52. Long division by any number from 2 through 12 (except 10).
53. Long division of a three- or four-place number by any two-place number (excepting one ending in zero).

(As soon as a multiplication table has been learned it should be put with other tables for *very frequent reviews.*)

GRADE FIVE B.

1. Review such work of grade 4 as needs it.
2. Fractions.
    - a. Development of meaning objectively.
    - b. The fraction as an expressed division.
    - c. Figure processes.
    - 1. Reduction.
        - (a) Integers and mixed numbers to improper fractions.
        - (b) Improper fractions to integers or mixed numbers.
        - (c) To higher and lower terms.
        - (d) To least common denominator.
    - 2. Addition and subtraction.
    - 3. Division.

GRADE FIVE A.

1. Review essential processes.
2. Fractions continued.
    - a. Multiplication.
    - b. Cancellation.
    - c. Division by inverting the divisor.

- d. Decimal fractions.
    - (1) Reading and writing.
    - (2) Changing common fractions to decimals.
    - (3) Changing decimals to common fractions.
    - (4) The four fundamental operations.
- e. Simple problems in application of the processes as they are learned throughout the entire grade.

GRADE SIX B.

1. Review:
    - a. Addition and multiplication for skill.
    - b. Writing and reading decimal fractions.
    - c. Aliquot parts.
2. Denominate numbers and measurements.
    - a. Memorize the *useful* tables thoroughly. See "Special Method in Arithmetic," as to omissions, page 21.
    - b. Reduction ascending and descending.
    - c. Addition, subtraction, and multiplication of denominate numbers. *Use only simple problems.*
    - d. Bill and accounts of sale.

GRADE SIX A.

1. Review:
    - a. To acquire skill in the operation with integers and fractions.
    - b. Tables of denominate numbers.
2. Application of space measurements.
    - a. To finding areas of rectangle, rhomboids, triangles and trapezoids, in the building trades and land measures.
    - b. To finding volumes of rectangular solids.
3. Determine concretely the approximate value of the ratio of the diameter to the circumference and follow this with finding the area of a circle by cutting into equal sectors and fitting them together to make an approximate rectangle.

   The problem material should be such as lies within the experience of the pupils and there should also be great variety.

GRADE SEVEN B.

1. Review such processes as seem to need it. The acquired skill should not be allowed to fall back.
2. Percentage.
    - a. Interpretation of per cent. into equivalent forms of common and decimal fractions.
    - b. The three fundamental problems.
    - c. Loss and gain.
    - d. Commercial discount.
    - e. Commission.
    - f. Taxes.

GRADE SEVEN A.

1. Percentage (continued).
    - a. Saving and investing money.
        - (1) Simple interest (6 per cent aliquot part method).
        - (2) Compound interest—using tables.
    - b. Banking.
        - (1) Promissory notes.
        - (2) Discount and loans.
        - (3) Domestic exchange.
        - (4) Letters of credit and traveler's cheques.
    - c. Stocks and bonds.
    - d. Miscellaneous problems in the application of percentage, especially such as come within the actual experience of the people in the community.

GRADE EIGHT B.

In this grade mensuration should be organized. The figures should be carefully constructed. Tools to be employed are *sharp* pencil, ruler, compass, protractor and note-book.

1. Plane figures.
    - a. The square.
    - b. The rectangle.
    - c. The general parallelogram.
    - d. The trapezoid.
    - e. The triangle.
    - f. The regular polygon.
        - (a) Hexagon.
        - (b) Quadrangle.
        - (c) Triangle.
        - (d) Octagon.
    - g. Circle, *review.*

    After developing the mensuration formulas in connection with these figures apply them to many problems, so that there is assurance in attacking a new problem.

    - h. Square root.

    Application to right triangle.

GRADE EIGHT A.

1. Solids.
    - a. The cube.
    - b. The rectangular parallelopiped.
    - c. The right prism.
    - d. The right cylinder.
    - e. The pyramid.
    - f. The cone.
    - g. The frustrum.
    - h. The sphere.
2. General review of the application of percentage and mensuration.

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